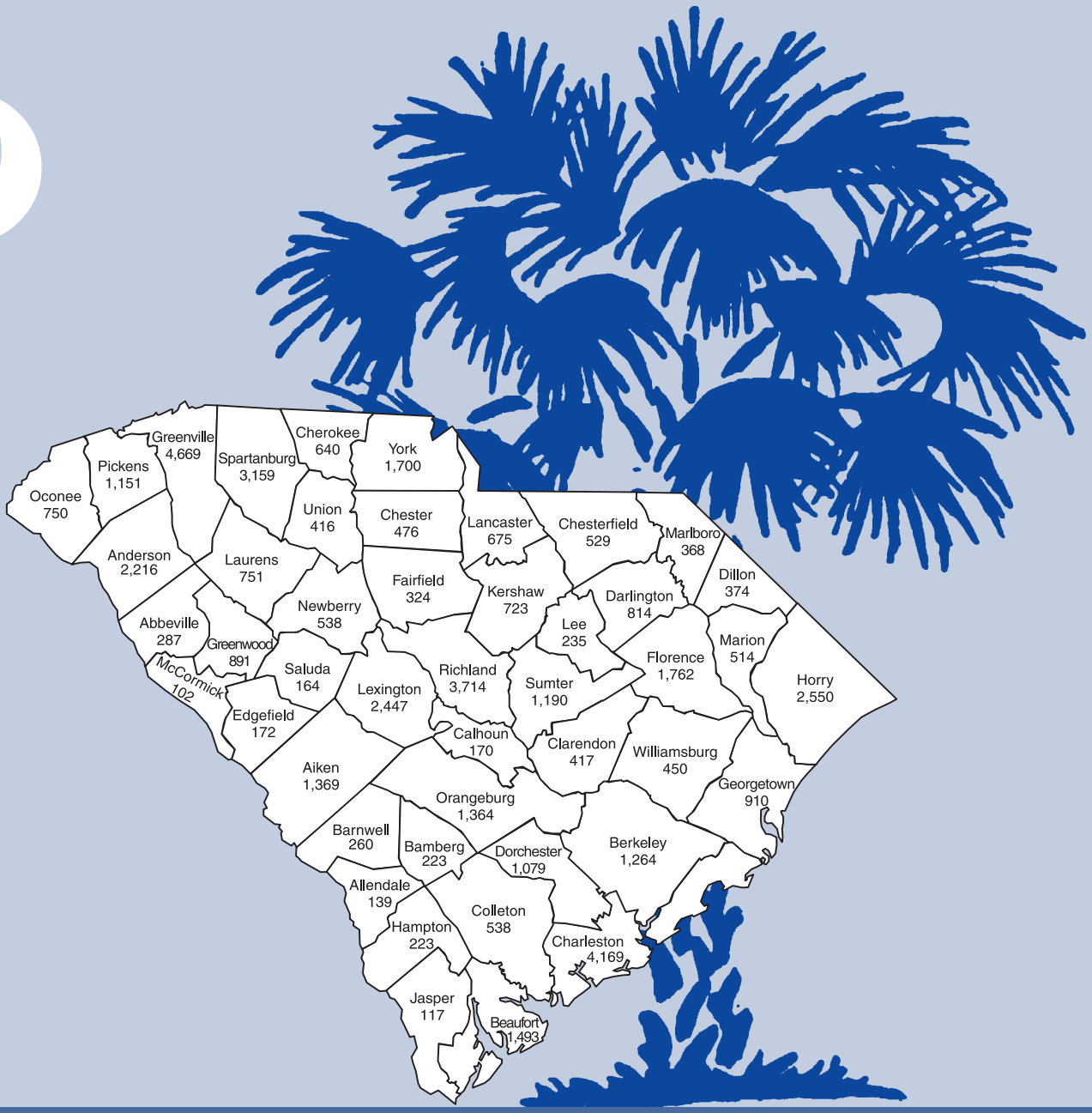

SOUTH CAROLINA CANCER FACTS AND FIGURES

2001 - 2002

South Carolina Central Cancer Registry
South Carolina Department of Health and Environmental Control
September 2001

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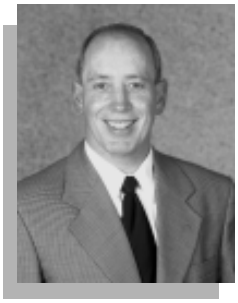
SOUTH CAROLINA
CANCER FACTS AND FIGURES
2001 - 2002

South Carolina Central Cancer Registry
Office of Public Health Statistics and Information Services
South Carolina Department of Health and Environmental Control
2600 Bull Street, Columbia South Carolina 29201
September 2001

A Message from the Commissioner



C. Earl Hunter
Commissioner,
S.C. Department
of Health and
Environmental Control

Cancer continues to pose a major public health threat to South Carolinians. Estimates indicate that 17,375 citizens of our state will be faced with a new cancer diagnosis in 2002. This number equates to almost 50 people per day. As in years past, cancer is still the second leading cause of death in our state. It will account for over 7,700 deaths in 2002. Surveillance of this dreaded disease is the cornerstone in providing information for public health and cancer control planning.

This report, "South Carolina Cancer Facts and Figures, 2001-2002", represents a milestone for the South Carolina Central Cancer Registry. It is the first report from the registry containing combined years of cancer incidence (1996-1998), and projected cancer estimates. It also represents our initial collaboration with the American Cancer Society, Southeast Division, for publishing a "Cancer Facts and Figures" report. We are pleased to share this publication with them.

It is noteworthy that on July 12, 2001, the DHEC Board of Directors recognized the central registry staff for their attainment of Gold Certification awarded by the North American Association of Central Cancer Registries' Certification Committee. All standards monitored for data completeness, timeliness, and quality were achieved at the highest level. Meeting these standards in all categories assures that the data are valid and reliable for use in the healthcare and research communities across this state and the nation. The credit for this accomplishment not only goes to the central registry staff, but to the many quality healthcare providers in South Carolina who report cancer data to DHEC. The quality of the data starts at the local level.

This report is a product of that spirit of commitment and dedication to excellence demonstrated by the central cancer registry and its partners in the medical community of South Carolina. It is our hope that this report will be a useful tool in cancer control efforts in South Carolina and the United States.

Sincerely,

C. Earl Hunter
Commissioner
South Carolina Department of Health and Environmental Control

A Message from the American Cancer Society

Jack Shipkoski
Chief Executive Officer
American Cancer Society
Southeast Division, Inc.

The South Carolina Cancer Facts and Figures 2001-2002 report represents the first joint publication by the South Carolina Central Cancer Registry and the American Cancer Society, Southeast Division. This important document contains information on cancer incidence, mortality, screening, prevention and early detection, giving a detailed picture of the impact of cancer in South Carolina.

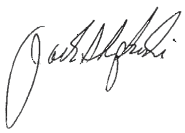
The American Cancer Society is dedicated to eliminating cancer as a major health problem. To do this, the American Cancer Society has set challenge goals to be achieved by 2015. These goals are to reduce cancer mortality by 50%, to reduce cancer incidence by 25%, and to improve the quality of life for all cancer survivors. These ambitious objectives are interdependent goals, which require public and private collaborative partnerships; and are the shared vision of the American Cancer Society, other public and private health organizations, corporations and community coalitions.

The data in this report will be used as a guide to help us accomplish these goals. Using these data for statewide and local cancer control efforts will enable us to intervene and hopefully prevent cancer from taking more lives in South Carolina.

The American Cancer Society offers a variety of free programs and services to the public and cancer patients and their families. Some current programs and services are discussed in this report. For more information on how the American Cancer Society can help you, please call 1-800-ACS-2345 or visit our website www.cancer.org.

The American Cancer Society is proud to have been a part of developing this first ever publication. The information in this report will help the American Cancer Society and our collaborative partners to meet the needs of South Carolinians.

Sincerely,



Jack Shipkoski
Chief Executive Officer
American Cancer Society
Southeast Division, Inc.

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INTRODUCTION

This report was written to address the impact of cancer on South Carolinians. The data provided in this report can be used to measure outcomes and the effectiveness of cancer control programs, as well as to develop future goals and programs to reduce the burden of cancer in South Carolina. It is hoped that this report will benefit everyone, including not only those involved in cancer control, but also those who simply want to know more about cancer where they live.

This report includes: 1) 2002 estimates of new cancer cases and deaths in South Carolina; 2) 1996-1998 cancer incidence data for South Carolina; 3) 1994-1998 cancer mortality data for South Carolina; 4) 1994-1998 national cancer incidence and mortality data for comparison; 5) the prevalence of cancer screening in South Carolina; 6) the prevalence of cancer risk factors in South Carolina.

How Does South Carolina Rank* in Cancer Mortality?

Multiple Myeloma	2nd
Oral/Pharynx	2nd
Prostate	3rd
Pancreas	4th
Esophagus	5th
Cervix	8th
Larynx	10th

*A rank of 1st would mean South Carolina has the highest mortality rate in the nation.
Source: SEER Cancer Statistics Review, 1973-1998

South Carolina Demographics

According to the 2000 United States Census, the total population in South Carolina was 4,012,012 persons. Between 1990 and 2000, the population of South Carolina increased 15.1% compared to a 13.2% increase for the United States[1].

In 2000, 67.2% of South Carolinians were white, 29.5% black, and 2.2% of other races; 2.4% of the population were of Hispanic or Latino origin[1]. Between 2000-2015, the population of South Carolina is expected to increase 13.2%. The largest growth will occur in the Hispanic population, which is expected to increase by 54.8% in South Carolina[2]. Large growth will also occur among the older population. Between 2000-2015, the population of South Carolinians aged 65 and older is expected to increase 45.6%.

South Carolina Report Card

- Cancer is the second leading cause of death in South Carolina accounting for 22% of all deaths (1994-1998).
- From 1975-1991, cancer death rates in South Carolina increased 39%. The increase in cancer death rates slowed in the 1990s. From 1991-1998, cancer deaths increased 6%.
- The four most common types of cancer death were lung, colon/rectum, breast, and prostate cancer deaths. Lung cancer alone caused more deaths than colon/rectum, breast, and prostate cancers combined (1994-1998).
- South Carolina ranks 2nd in the nation in oral/pharynx cancer deaths and multiple myeloma deaths, and 3rd in the nation in prostate cancer deaths.
- One in two males and one in three females will develop cancer at some time in their lives.
- Prostate, lung, breast, and colon/rectum cancers were the top four types of cancer diagnosed in South Carolina. Together these cancers accounted for 58% of new cancer diagnoses (1996-1998).
- Black and other men in South Carolina are more often diagnosed with prostate cancer than white men; while white women in the state are more often diagnosed with breast cancer than black and other women.
- In South Carolina, whites are more often diagnosed with early stage cancer than black and others. A total of 49.9% of whites were diagnosed in early stage compared to 41.2% of black and others in South Carolina (1996-1998).

BASIC CANCER QUESTIONS AND ANSWERS

What is Cancer?

Cancer is not one disease, but a group of diseases. For example, lung cancer is a completely different disease than colorectal cancer or prostate cancer. All cancers have one thing in common, if they are not treated properly, then they can grow and spread uncontrollably, which can result in death. Cancer is caused by many factors, some are modifiable, such as smoking, and others cannot be changed, such as age. Factors can also be considered internal (genetic/family history) or external (exposure to cigarette smoke/pollution/radiation).

How Many New Cases Will Occur This Year?

In 2002, it is estimated that almost 1.3 million new cancer cases will be diagnosed in the United States, which is over 3,500 cases per day. Approximately 17,375 new cancer cases are expected to be diagnosed in South Carolina in 2002 *(Table 1, page 8)*. These estimates do not include basal and squamous cell skin cancers or carcinoma in situ for sites other than urinary bladder. Nationally, more than 1 million cases of basal and squamous cell skin cancers will be diagnosed in 2002.

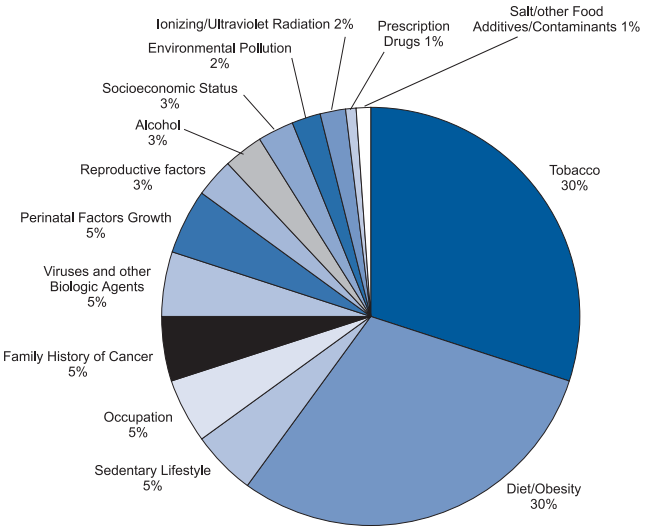
How Many People Will Die of Cancer This Year?

Cancer is the second leading cause of death in the United States and in South Carolina. In 2002, over 553,000 Americans are expected to die of cancer, which is more than 1,500 people per day. Approximately 7,730 South Carolinians will die of cancer in 2002, which is almost 21 people a day *(Table 2, page 9)*.

Can Cancer Be Prevented?

Adjusting certain risk factors can prevent many cancers. Almost two-thirds of all cancer deaths are related to modifiable risk factors such as tobacco use, obesity, and physical inactivity. Many skin cancers can be prevented by regular protection from the sun's rays. Regular screening examinations by a health care provider can result in detection of cancers of the breast, colon, rectum, cervix, prostate, testis, and oral cavity. When these cancers are detected early, treatment is more likely to be successful and survival the greatest.

Figure 1. Causes of Cancer in the United States



Source: Cancer Causes & Control, Harvard Report on Cancer Prevention, 1996

Who Is at Risk of Developing Cancer?

While everyone is at risk, the greatest risk factor for any cancer is increasing age. As people age their risk of developing cancer also increases. Over 75% of all cancers in South Carolina are diagnosed in people aged 55 and older. In the United States, 1 out of 2 men and 1 out of 3 women will develop cancer in their lifetime.

How Is Cancer Treated?

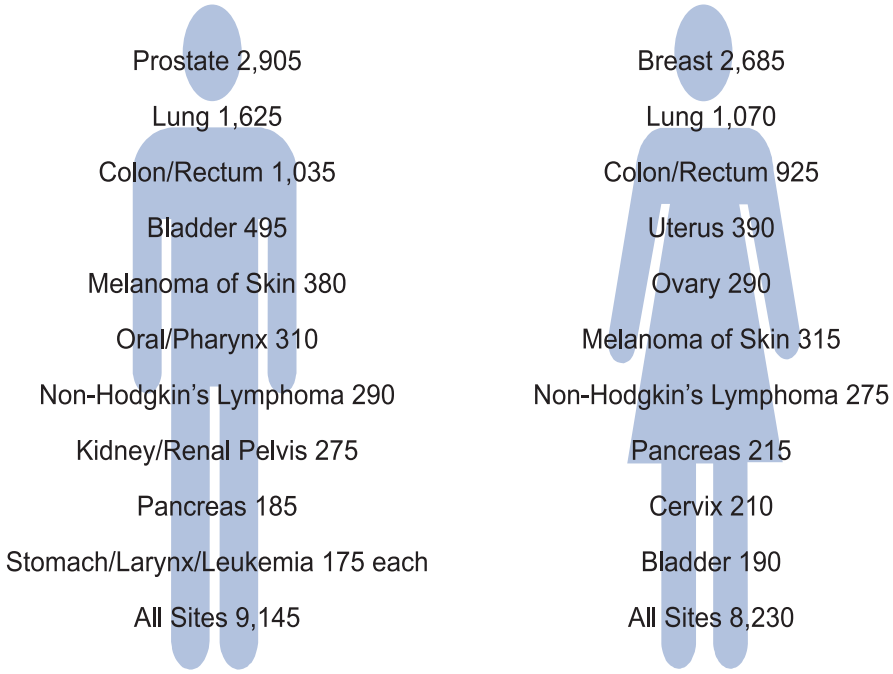
Cancer is most often treated by surgery, radiation, chemotherapy, hormones, and immunotherapy (agents to stimulate the body's defenses) or a combination of two or more of these methods.

What Are the Costs of Cancer?

Using estimates from the National Institutes of Health, the overall annual cost of cancer in South Carolina is approximately $2.6 billion; $869 million for direct medical costs (total of all health expenditures), $217 million for indirect morbidity costs (cost of lost productivity due to illness), and $1.5 billion for indirect mortality costs (cost of lost productivity due to premature death). Insurance status and barriers to health care may affect the cost of treating cancer in this country.

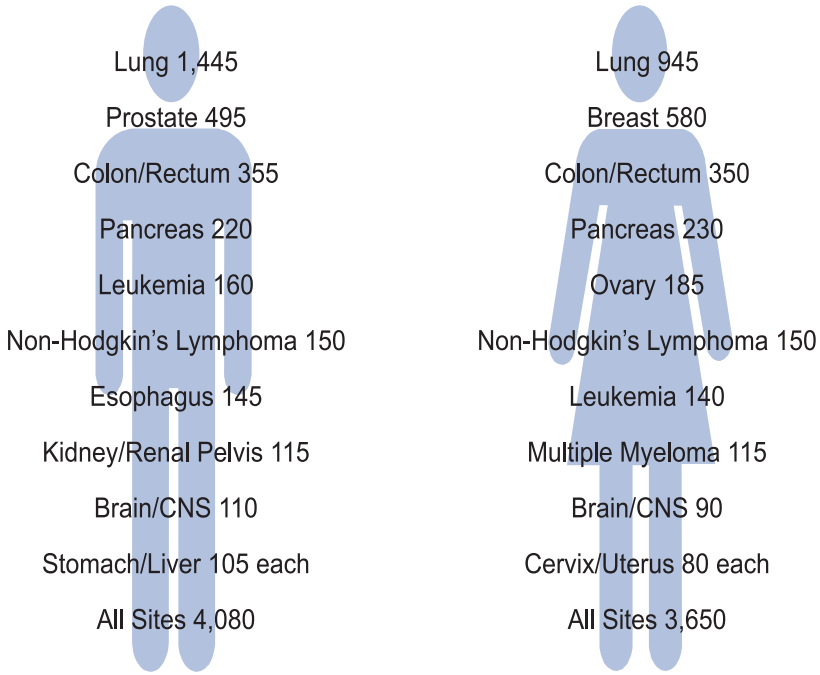
CANCER IN SOUTH CAROLINA IN 2002

Figure 2. Cancer Cases in South Carolina, 2002 Estimates



* Excludes basal and squamous cell skin cancer and carcinoma in situ except bladder.

Figure 3. Cancer Deaths in South Carolina, 2002 Estimates



* Excludes basal and squamous cell skin cancer and carcinoma in situ except bladder.

Table 1. Estimated New Cancer Cases by County, South Carolina, 2002

County	Number of Cases*										
	All Sites	Prostate	Lung	Breast (Female)	Colon/ Rectum	Melanoma of Skin	Bladder	NHL	Oral/ Pharynx	Kidney/ Renal Pelvis	Cervix
Abbeville	90	25	15	15	10	<5	10	<5	<5	<5	<5
Aiken	510	85	85	80	75	20	20	15	15	10	10
Allendale	55	10	10	10	10	<5	<5	<5	<5	<5	<5
Anderson	780	120	115	120	95	35	30	30	30	25	10
Bamberg	75	15	15	10	10	<5	<5	<5	<5	<5	<5
Barnwell	75	10	15	20	<5	<5	10	<5	<5	<5	<5
Beaufort	585	125	75	105	55	35	35	25	15	15	10
Berkeley	525	90	90	90	50	25	25	25	15	15	10
Calhoun	90	20	10	15	15	<5	10	<5	<5	<5	<5
Charleston	1,490	290	230	210	170	85	60	55	50	35	10
Cherokee	245	35	35	50	30	10	10	10	10	10	<5
Chester	155	25	25	20	20	10	<5	<5	10	10	<5
Chesterfield	210	35	30	35	35	10	<5	10	<5	10	<5
Clarendon	140	25	30	25	20	<5	10	<5	<5	<5	<5
Colleton	215	35	35	30	25	10	10	10	10	<5	<5
Darlington	290	45	55	55	40	15	15	<5	10	10	<5
Dillon	115	20	20	20	15	<5	<5	<5	<5	<5	<5
Dorchester	365	65	50	80	35	20	15	15	10	10	<5
Edgefield	50	15	15	<5	<5	<5	10	<5	<5	<5	<5
Fairfield	115	30	20	15	15	<5	10	<5	10	<5	<5
Florence	595	100	115	75	65	20	25	20	20	20	10
Georgetown	305	60	50	45	35	10	20	10	15	10	10
Greenville	1,690	260	240	315	160	85	55	55	50	55	25
Greenwood	310	40	55	60	50	10	20	10	10	10	<5
Hampton	75	15	10	15	15	<5	10	<5	<5	<5	<5
Horry	1,020	200	160	145	125	45	45	35	25	20	15
Jasper	45	10	10	10	<5	<5	<5	<5	<5	<5	<5
Kershaw	215	30	40	35	25	10	<5	10	10	10	10
Lancaster	290	45	35	35	40	20	15	15	10	10	<5
Laurens	275	45	45	50	45	10	10	10	10	10	<5
Lee	85	15	15	15	10	<5	<5	<5	<5	<5	<5
Lexington	940	125	160	155	110	50	45	30	25	25	10
Marion	190	45	40	25	20	<5	10	10	<5	10	10
Marlboro	140	25	20	25	15	<5	<5	<5	10	<5	<5
McCormick	50	10	10	10	10	<5	<5	<5	<5	<5	<5
Newberry	200	25	30	40	25	10	10	10	<5	10	<5
Oconee	285	30	50	45	45	15	15	10	<5	10	10
Orangeburg	475	105	65	75	50	20	15	20	15	10	10
Pickens	385	55	80	55	40	20	20	15	10	10	10
Richland	1,285	250	175	195	130	40	35	50	40	40	20
Saluda	70	20	10	15	10	<5	<5	<5	<5	<5	<5
Spartanburg	1,095	150	185	190	125	35	55	40	35	25	10
Sumter	450	85	80	60	50	15	20	15	15	15	10
Union	125	20	25	25	15	10	10	<5	10	<5	<5
Williamsburg	155	30	30	20	15	<5	10	10	<5	10	<5
York	560	85	80	110	70	20	25	10	15	20	10
South Carolina	**17,375**	**2,905**	**2,695**	**2,685**	**1,960**	**695**	**685**	**565**	**480**	**450**	**210**

*Cases between 5 and 9 were rounded to 10.
NHL: Non-Hodgkin's Lymphoma
Note: County estimates may not add to South Carolina total due to rounding.

Table 2. Estimated Cancer Deaths by County, South Carolina, 2002

County	Number of Deaths*										
	All Sites	Lung	Colon/ Rectum	Breast (Female)	Prostate	Pancreas	Leukemia	NHL	Multiple Myeloma	Brain/ CNS	Stomach
Abbeville	50	15	10	<5	10	<5	<5	<5	<5	<5	<5
Aiken	270	85	35	30	20	15	10	10	10	<5	10
Allendale	30	<5	<5	10	<5	<5	<5	<5	<5	<5	<5
Anderson	325	90	35	25	25	20	10	25	10	15	10
Bamberg	45	20	<5	<5	<5	10	<5	<5	<5	<5	<5
Barnwell	50	15	<5	<5	<5	<5	10	<5	<5	<5	<5
Beaufort	190	50	20	10	20	20	10	10	<5	<5	<5
Berkeley	200	70	15	20	20	15	10	10	<5	<5	<5
Calhoun	30	10	<5	<5	<5	<5	<5	<5	<5	<5	<5
Charleston	595	165	60	35	25	45	20	30	25	15	25
Cherokee	100	35	10	10	<5	10	10	10	<5	<5	<5
Chester	75	25	15	10	<5	<5	<5	<5	<5	<5	<5
Chesterfield	95	30	15	10	10	10	<5	<5	<5	<5	<5
Clarendon	85	25	10	<5	<5	<5	10	<5	<5	<5	10
Colleton	85	30	10	10	10	<5	10	<5	<5	<5	10
Darlington	145	45	15	15	15	10	<5	<5	10	10	<5
Dillon	80	35	10	10	10	<5	<5	<5	<5	<5	<5
Dorchester	150	50	15	10	15	<5	<5	10	<5	<5	<5
Edgefield	45	20	<5	<5	<5	<5	<5	<5	<5	<5	<5
Fairfield	50	15	10	10	<5	<5	<5	<5	<5	<5	<5
Florence	280	80	25	30	20	15	15	10	10	10	<5
Georgetown	130	45	10	15	10	10	10	<5	<5	<5	<5
Greenville	665	200	65	60	35	40	30	25	20	30	10
Greenwood	170	50	15	10	20	10	15	10	10	<5	<5
Hampton	50	15	10	10	<5	<5	<5	10	<5	<5	<5
Horry	400	125	35	35	15	35	15	15	15	15	10
Jasper	30	15	<5	10	<5	<5	<5	<5	<5	<5	<5
Kershaw	110	40	15	10	15	<5	<5	<5	<5	<5	<5
Lancaster	105	45	15	<5	<5	10	<5	<5	<5	<5	<5
Laurens	130	40	15	10	15	10	10	<5	<5	<5	<5
Lee	60	15	10	10	<5	<5	<5	<5	<5	<5	<5
Lexington	390	150	30	35	20	25	20	20	10	10	15
Marion	85	35	10	10	15	<5	<5	<5	<5	<5	<5
Marlboro	80	25	10	<5	10	10	<5	10	<5	<5	<5
McCormick	30	15	<5	<5	<5	<5	<5	<5	<5	<5	<5
Newberry	85	30	10	<5	<5	10	<5	<5	<5	<5	<5
Oconee	160	45	15	15	10	10	<5	10	<5	10	<5
Orangeburg	215	60	20	20	20	20	10	10	<5	<5	10
Pickens	175	70	10	20	15	10	10	<5	<5	10	<5
Richland	525	170	40	45	25	35	20	25	20	15	20
Saluda	35	15	<5	<5	<5	<5	<5	<5	<5	<5	<5
Spartanburg	525	170	55	40	35	30	20	30	20	15	15
Sumter	225	60	25	20	10	10	20	15	<5	<5	15
Union	85	30	10	10	<5	10	<5	<5	<5	<5	<5
Williamsburg	100	25	10	<5	20	10	<5	<5	<5	<5	<5
York	280	80	25	20	20	10	20	10	10	10	<5
South Carolina	**7,730**	**2,390**	**705**	**580**	**495**	**450**	**300**	**300**	**205**	**200**	**175**

*Deaths between 5 and 9 were rounded to 10.
NHL: Non-Hodgkin's Lymphoma
Note: County estimates may not add to South Carolina total due to rounding.

ALL CANCER SITES

Incidence

From 1996 to 1998, a total of 48,518 cancers were diagnosed in South Carolina *(Table 3)*. More males (53%) in South Carolina were diagnosed with cancer than females (47%). Overall, South Carolina's cancer incidence rate (382.3) was lower than the national rate (400.5). Black and other males had the highest incidence rate of any race-sex group in South Carolina.

There are several counties in the midlands and along the coast where incidence rates are significantly higher than the state average *(Figure 4)*.

An estimated 17,375 new cases of cancer are expected to be diagnosed in South Carolina in 2002.

Mortality

Cancer is the second leading cause of death in the United States and in South Carolina, exceeded only by heart disease. In the United States, one of every four deaths is from cancer. In recent years, cancer mortality rates have begun to decline, following the national trend of decreasing cancer mortality rates *(Figure 5)*. Males in South Carolina are 70% more likely to die of cancer than females. Black and other males have the highest mortality rate of any race-sex group in South Carolina.

South Carolina currently ranks 18th in the nation in all cancer sites mortality. An estimated 7,730 South Carolinians are expected to die of cancer in 2002.

Figure 4. All Cancer Sites Incidence Rates by County, South Carolina, 1996-1998

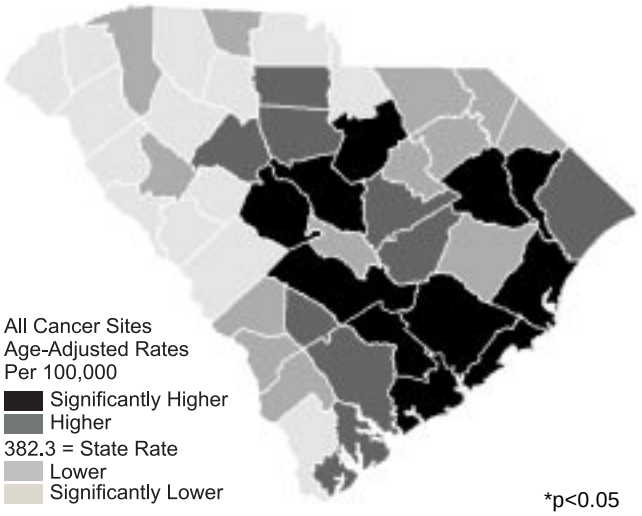
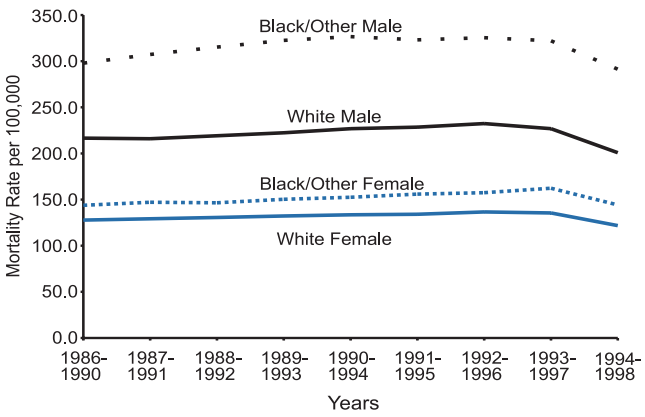


Figure 5. All Cancer Sites Mortality Rates* by Race and Sex, South Carolina, 1990-1998



*Rate per 100,000, age-adjusted to the 1970 US standard population.

Risk Factors

Age:
As age increases the risk of developing cancer increases.

Gender:
Males are at a higher risk of developing cancer than females.

Race:
Blacks are at a higher risk of developing cancer than whites.

Lifestyle:
Tobacco use increases the risk of developing cancer, including lung, oral/pharynx, larynx, esophagus, pancreas, bladder, kidney, and cervical cancers.

Excessive alcohol use, especially when combined with smoking, increases the risk of oral/pharynx, esophagus, larynx, and liver cancers.

Family History:
A family history of breast, ovary, melanoma, or colon cancer can put an individual at increased risk for these same types of cancer.

Table 3. All Cancer Sites Incidence and Mortality in South Carolina

Incidence*	White Male	Black & Other Male	All Males	White Female	Black & Other Female	All Females	Total
Number of New Cases (1996-1998)	18,863	6,385	25,520	17,454	5,399	22,989	48,518
SC Incidence Rate (1996-1998)	447.1	541.4	472.0	326.4	297.9	321.1	382.3
SEER Incidence Rate (1994-1998)	464.3	596.6	468.5	360.3	342.6	352.8	400.5
Mortality*							
Number of Deaths (1994-1998)	14,501	5,988	20,489	12,442	4823	17,265	37,757
SC Mortality Rate (1994-1998)	219.6	315.9	240.8	134.2	161.4	141.3	180.5
US Mortality Rate(1994-1998)	200.5	292.3	206.0	137.3	165.7	138.6	166.2

*Numbers and rates exclude in situ cancers, except bladder. Rates are per 100,000 and age-adjusted to the 1970 US standard population.

Stage of Disease

Stage of disease refers to the extent to which cancer has spread when diagnosed. In general, the earlier the stage, the better the chances of survival. For common cancers such as breast, prostate, colorectal, cervix, and melanoma of skin, survival rates are between 90 and 95 percent if the cancer is discovered before it has spread beyond the organ of origin (early stage).

In South Carolina from 1996-1998, more cancers were diagnosed in early stage (i.e. in situ and localized) than in late stage (i.e. regional and distant) of disease, 48.0% and 40.2% respectively *(Figure 6)*.

However, a different pattern emerges when looking at stage at diagnosis by race. Whites in South Carolina are more likely to be diagnosed with early stage disease while black and others are more likely to be diagnosed with late stage disease. From 1996-1998, 50.1% of whites and 41.3% of black/others were diagnosed in early stage. A total of 38.9% of whites and 45.2% of black/others were diagnosed with late stage disease *(Figure 7)*.

American Cancer Society (ACS) 2015 Challenge Goals

- A 50% reduction in overall age-adjusted cancer mortality rates.
- A 25% reduction in overall age-adjusted cancer incidence rates.
- A measurable improvement in the quality of life (physical, psychological, social, and spiritual) from the time of diagnosis and for the remainder of life, of all cancer survivors.

Figure 6. Stage at Diagnosis for All Cancer Sites, South Carolina, 1996-1998

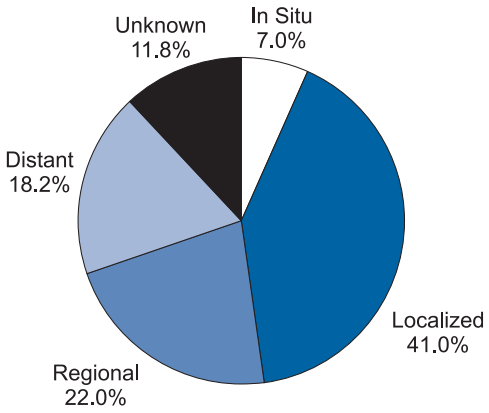
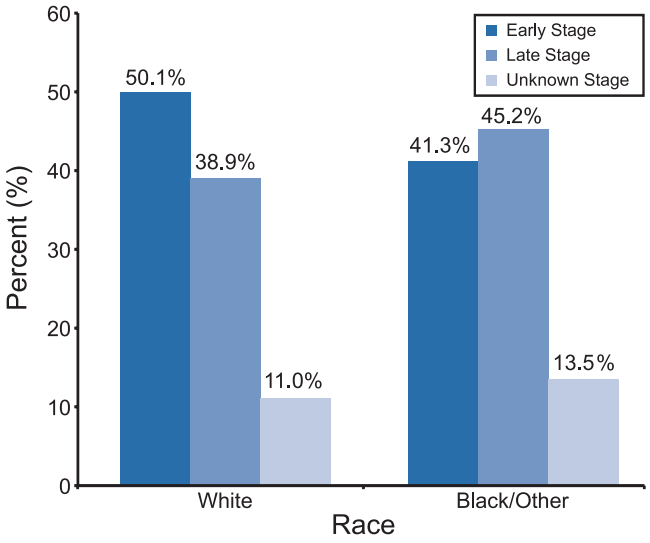


Figure 7. Stage at Diagnosis for All Cancer Sites by Race, South Carolina, 1996-1998



BREAST CANCER

Incidence

Breast cancer is the most commonly diagnosed cancer among women in South Carolina, regardless of race, accounting for 31% of all female cancer cases. Breast cancer occurs in both women and men, but women are at a much higher risk of developing breast cancer. From 1996-1998, a total of 7,211 female breast cancers were diagnosed in South Carolina *(Table 4)*.

There are three counties (Beaufort, Dorchester, Greenville) that have incidence rates significantly higher than the state average *(Figure 8)*.

An estimated 2,685 new cases of breast cancer are expected to be diagnosed among South Carolina females in 2002.

Mortality

Breast cancer is the second leading cause of cancer death in South Carolina females, accounting for 17% of all cancer deaths in females between 1994-1998. Black and other women in South Carolina are 42% more likely to die from breast cancer than white women.

Over the last few years, breast cancer mortality rates have been increasing among black and other females in South Carolina, while mortality rates for white females have begun to decline *(Figure 9)*.

South Carolina currently ranks 23rd in the nation in female breast cancer mortality. An estimated 580 women in South Carolina are expected to die of breast cancer in 2002.

Figure 8. Female Breast Cancer Incidence Rates by County, South Carolina, 1996-1998

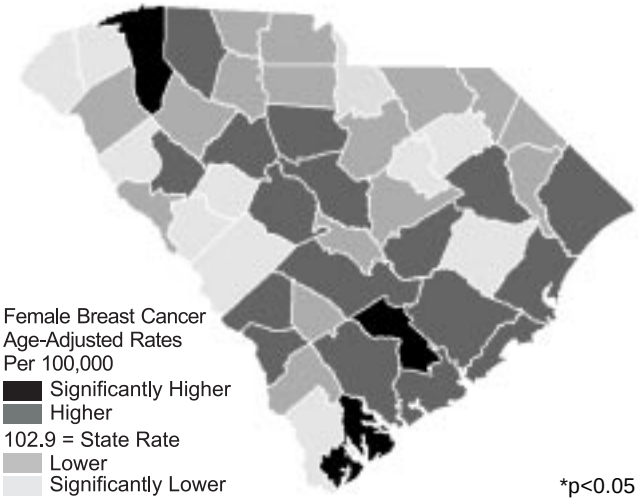
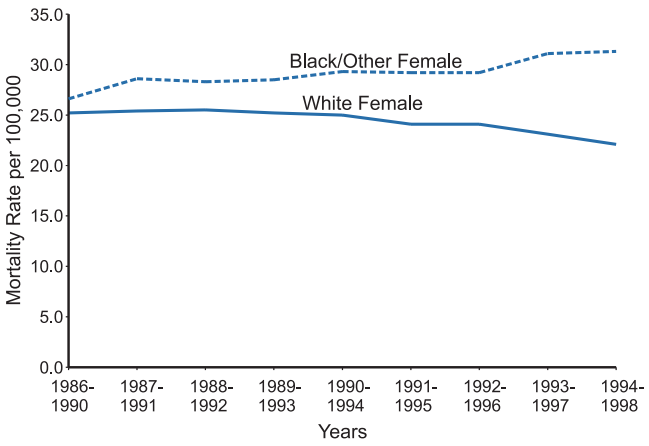


Figure 9. Breast Cancer Mortality Rates* by Race, South Carolina, 1990-1998



*Rate per 100,000, age-adjusted to the 1970 US standard population.

Risk Factors

Age:
Risk increases with age.

Gender:
Breast cancer is 100 times more common in women than men.

Race:
White women are more likely to develop breast cancer than black women, while black women are more likely to die from breast cancer.

Family History:
Having a mother or sister with breast cancer approximately doubles a woman's risk.

Lifestyle:
Obesity, especially after menopause.

Consuming two or more alcoholic beverage per day.

Recent use of oral contraceptives or postmenopausal estrogens.

Medical History:
A long menstrual history (menstrual periods that start early and end late in life).

Never having children or having the first child after age 30.

Biopsy-confirmed atypical hyperplasia.

Table 4. Breast Cancer Incidence and Mortality in South Carolina

Incidence*	White Male	Black & Other Male	All Males	White Female	Black & Other Female	All Females
Number of New Cases (1996-1998)	45	15	63	5,562	1,626	7,211
SC Incidence Rate (1996-1998)	1.0	1.3	1.2	106.3	89.5	102.9
SEER Incidence Rate (1994-1998)	1.0	1.3	1.0	117.9	103.3	114.3
Mortality*						
Number of Deaths (1994-1998)	13	11	24	1,954	917	2,871
SC Mortality Rate (1994-1998)	---	---	0.3	22.1	31.3	24.5
US Mortality Rate (1994-1998)	0.2	0.5	0.3	23.8	30.9	24.2

* Numbers and rates exclude in situ breast cancers. Rates are per 100,000 and age-adjusted to the 1970 US standard population.
Note: Rates are not calculated for fewer than 20 deaths.

Stage of Disease

Detecting breast cancer in the early stages of the disease (i.e. in situ and localized) saves lives. The majority, 66.2%, of South Carolina women diagnosed with breast cancer from 1996-1998 were diagnosed with early stage disease *(Figure 10)*. Following the guidelines for early detection will not prevent breast cancer, but it can help to find breast cancer when the likelihood of successful treatment is the greatest.

Breast Cancer Screening in South Carolina

According to the 1998 Behavioral Risk Factor Surveillance System (BRFSS), 70% of females aged 40-49 and 77% of females aged 50-64 in South Carolina reported having a mammogram and clinical breast exam within the past year. Women aged 65 and older were more likely than younger women to have had a mammogram and clinical breast exam in the past year (81%) *(Figure 11)*.

American Cancer Society Guidelines for the Early Detection of Breast Cancer

***Females ages 40 and older*:** Annual mammogram, annual clinical breast examination by a health care professional, monthly breast self-examination. The clinical breast examination should be conducted close to and preferably before the scheduled mammogram.

***Females ages 29-39*:** Clinical breast examination by a health care professional every three years and monthly breast self-examination.

Figure 10. Stage at Diagnosis for Female Breast Cancer, South Carolina, 1996-1998

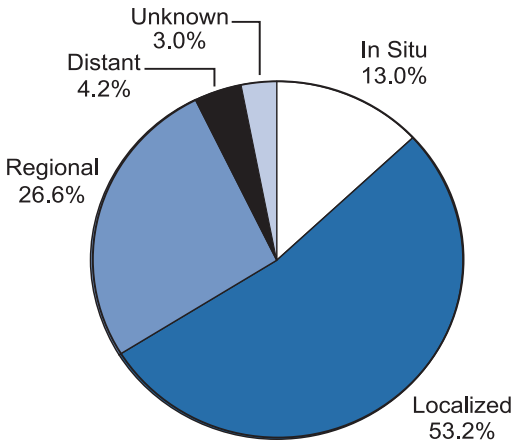
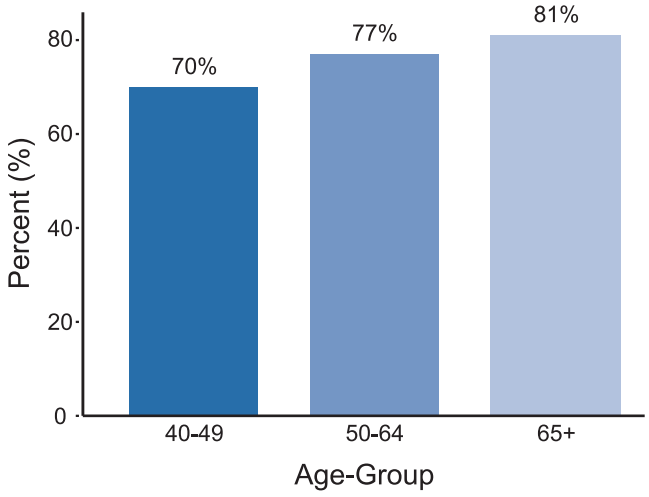


Figure 11. Women Reporting Having Had a Mammogram and Clinical Breast Exam in the Past Year, South Carolina, 1998



Source: South Carolina Behavioral Risk Factor Surveillance System

CERVICAL CANCER

Incidence

Cervical cancer is the ninth most commonly diagnosed cancer among white women and the fifth most commonly diagnosed cancer among black and other women in South Carolina.

From 1996-1998, a total of 703 cervical cancer cases were diagnosed in South Carolina (*Table 5)*. Black and other women were 60% more likely to be diagnosed with cervical cancer than white women.

Marion County's cervical cancer incidence rate is significantly higher than the state average *(Figure 12)*.

An estimated 210 new cases of invasive cervical cancer are expected to be diagnosed among South Carolina women in 2002.

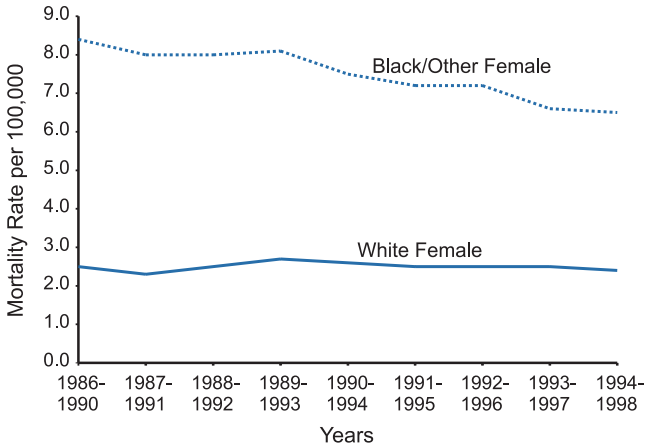
Mortality

From 1994-1998, a total of 400 cervical cancer deaths occurred in South Carolina, accounting for 2.3% of all cancer deaths in South Carolina women. Black and other women in South Carolina have a cervical cancer mortality rate 170% higher than white women.

Over the last 10 years, the cervical cancer mortality rate has declined almost 23% among black and other women in South Carolina, while the cervical cancer mortality rate for white females has remained fairly constant *(Figure 13)*.

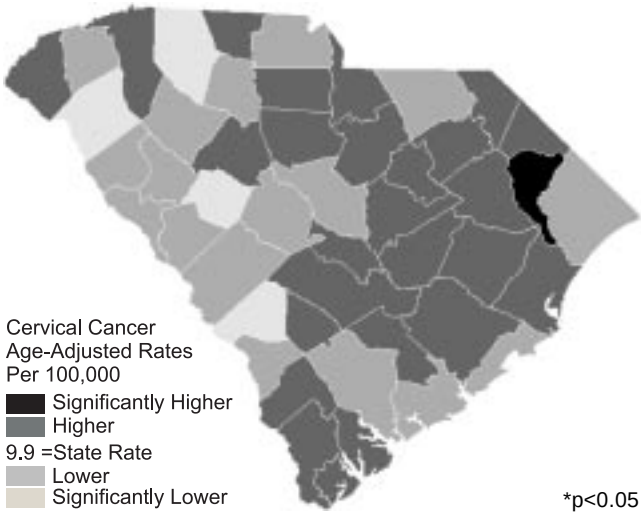
South Carolina ranks 8th in the nation in cervical cancer mortality. An estimated 80 women in South Carolina are expected to die of cervical cancer in 2002.

Figure 13. Cervical Cancer Mortality Rates* by Race, South Carolina, 1990-1998



*Rate per 100,000, age-adjusted to the 1970 US standard population.

Figure 12. Cervical Cancer Incidence Rates by County, South Carolina, 1996-1998



Risk Factors

Age:
A woman's risk of developing cervical cancer increases with age.

Race:
African-American women are more likely to develop and die from cervical cancer than Caucasian women.

Lifestyle:
First sexual intercourse at an early age.

Multiple sexual partners or partners who have had multiple sexual partners.

Cigarette smoking.

Low socioeconomic status.

Infection:
Human papillomavirus (HPV) infection has been associated with both preinvasive and invasive cervical cancer. HPV is passed from men to women during sexual intercouse.

Table 5. Cervical Cancer Incidence and Mortality in South Carolina

Incidence*	White Male	Black & Other Male	All Males	White Female	Black & Other Female	All Females
Number of New Cases (1996-1998)	---	---	---	432	265	703
SC Incidence Rate (1996-1998)	---	---	---	8.6	13.8	9.9
SEER Incidence Rate (1994-1998)	---	---	---	7.0	11.3	7.7
Mortality*						
Number of Deaths (1994-1998)	---	---	---	203	197	400
SC Mortality Rate (1994-1998)	---	---	---	2.4	6.5	3.4
US Mortality Rate (1994-1998)	---	---	---	2.4	5.3	2.7

*Numbers and rates exclude in situ cervical cancers. Rates are per 100,000 and age-adjusted to the 1970 US standard population.

Stage of Disease

The majority, 57.8%, of South Carolina women diagnosed with cervical cancer from 1996-1998 were diagnosed with early stage disease (i.e. localized) *(Figure 14)*. The vast majority of invasive cervical cancers can be prevented, and following the guidelines for early detection of cervical cancer can help in the prevention of this cancer.

Cervical Cancer Screening in South Carolina

According to the 1998 Behavioral Risk Factor Surveillance System (BRFSS), 94% of women in South Carolina reported having a Pap smear within the past three years. Females aged 40-49 had the highest rate of Pap test screening (98.6%), while females aged 18-24 had the lowest rate (76.4%) *(Figure 15)*. Every year between 1994 and 1998, at least 94% of South Carolina women reported having had a Pap smear within the last three years.

American Cancer Society Guidelines for Early Detection of Cervical Cancer

- An annual Pap test and pelvic examination in females who are or have been sexually active, or have reached age 18.
- After three or more consecutive annual exams with normal findings, the Pap test may be performed less frequently at the discretion of the physician.

Figure 14. Stage at Diagnosis for Cervical Cancer, South Carolina, 1996-1998

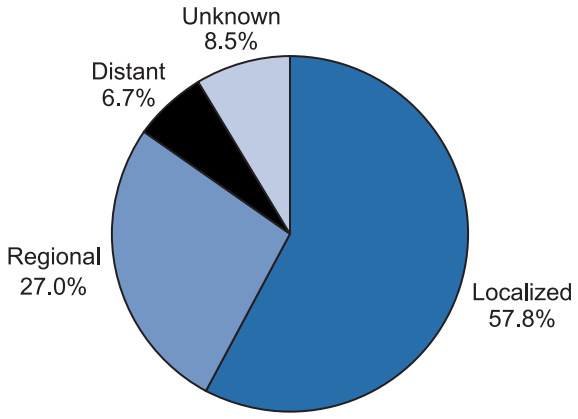
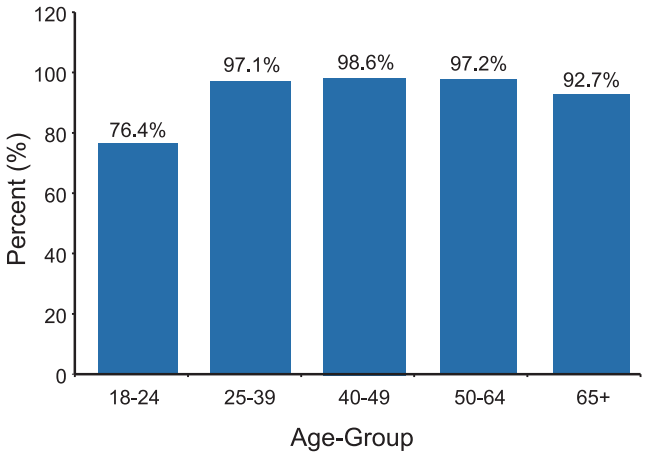


Figure 15. Females Aged 18 and Older Having Had a Pap Smear*, South Carolina, 1998



*Reporting having had a Pap smear within the past three years.
Source: South Carolina Behavioral Risk Factor Surveillance System

COLON/RECTUM CANCER

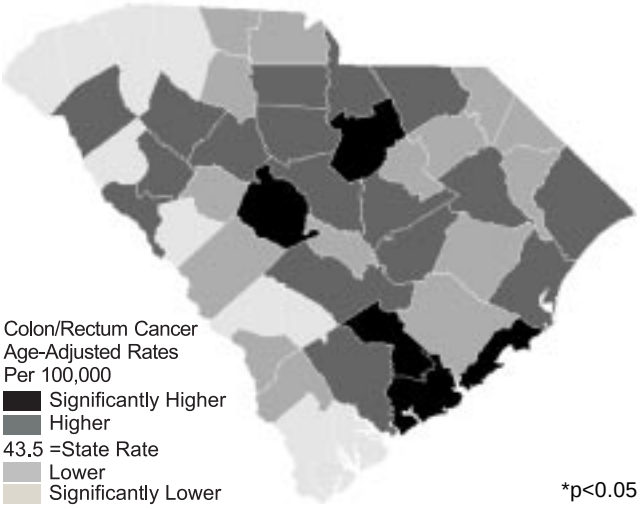
Incidence

Colorectal cancer is the fourth most common cancer diagnosed in South Carolina, accounting for 12% of all cancer cases diagnosed. From 1996-1998, a total of 5,632 colorectal cancers were diagnosed in South Carolina, with 51% of the cases occurring in males and 49% in females *(Table 6)*.

Four counties (Charleston, Dorchester, Kershaw, Lexington) have incidence rates significantly higher than the state average *(Figure 16)*.

An estimated 1,960 new cases of colorectal cancer are expected to be diagnosed in South Carolina in 2002, with approximately 1,035 cases occurring in males and 925 cases in females.

Figure 16. Colorectal Cancer Incidence Rates by County, South Carolina, 1996-1998



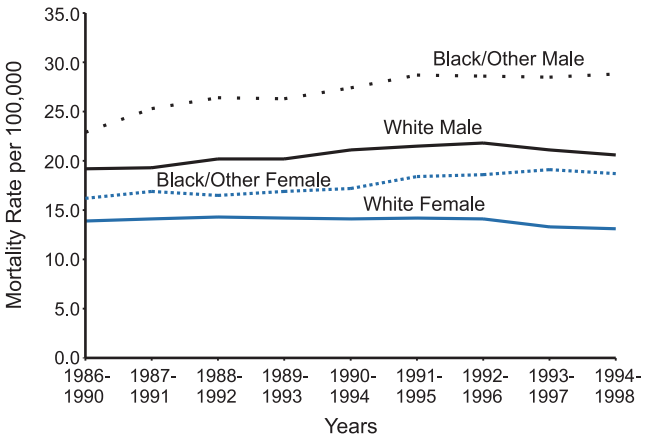
Mortality

Colorectal cancer is the second leading cause of cancer deaths in South Carolina, accounting for 10% of all cancer deaths between 1994-1998. Black and other males in South Carolina have a higher colorectal cancer mortality rate than any other race-sex group.

Over the last few years, colorectal cancer mortality rates have increased; however, more recently, the mortality rates have begun to decline *(Figure 17)*.

South Carolina currently ranks 25th in the nation in colorectal cancer mortality. An estimated 705 South Carolinians (355 males and 350 females) are expected to die of colorectal cancer in 2002.

Figure 17. Colorectal Cancer Mortality Rates* by Race and Sex, South Carolina, 1990-1998



*Rate per 100,000, age-adjusted to the 1970 US standard population.

Risk Factors

Age:
The risk of developing colorectal cancer increases with age. The majority (90%) of cases occur after age 50.

Family History:
A personal or family history of colorectal cancer, polyps, or inflammatory bowel disease increases risk.

Lifestyle:
A sedentary lifestyle with little physical activity.

A diet high in fat (especially from animal sources) and/or low in fiber.

Inadequate intake of fruits, vegetables, and grains.

Obesity.

Smokers are 30%-40% more likely to die of colorectal cancer than non-smokers.

Table 6. Colorectal Cancer Incidence and Mortality in South Carolina

Incidence	White Male	Black & Other Male	All Males	White Female	Black & Other Female	All Females	Total
Number of New Cases[1] (1996-1998)	2,210	645	2,862	2,039	724	2,769	5,632
SC Incidence Rate[2] (1996-1998)	52.8	54.3	53.2	35.2	40.4	36.5	43.5
SEER Incidence Rate[2] (1994-1998)	51.8	56.9	52.2	37.0	44.9	37.5	43.9
Mortality							
Number of Deaths (1994-1998)	1,348	549	1,897	1,295	572	1,867	3,764
SC Mortality Rate[3] (1994-1998)	20.7	28.6	22.4	13.0	18.7	14.5	17.7
US Mortality Rate[3] (1994-1998)	20.1	27.2	20.5	13.7	19.5	14.1	16.9

*Numbers and rates exclude in situ colon/rectum cancers. Rates are per 100,000 and age-adjusted to the 1970 US standard population.

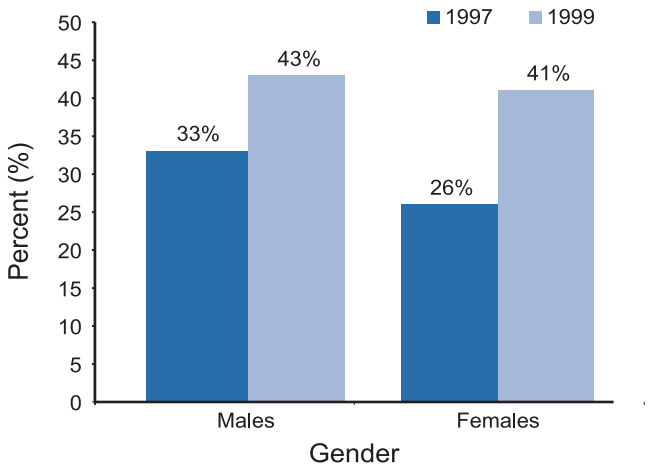
Stage of Disease

The early detection and removal of precancerous polyps can greatly reduce the risk of developing or dying of invasive colorectal cancer. Unfortunately, the majority, 56.7%, of colorectal cancer cases in South Carolina are diagnosed in later stage of disease (i.e. regional and distant). Following the appropriate screening guidelines can help to detect colorectal cancer early in its development, when the likelihood of successful treatment is the greatest *(Figure 18)*.

Colorectal Cancer Screening in South Carolina

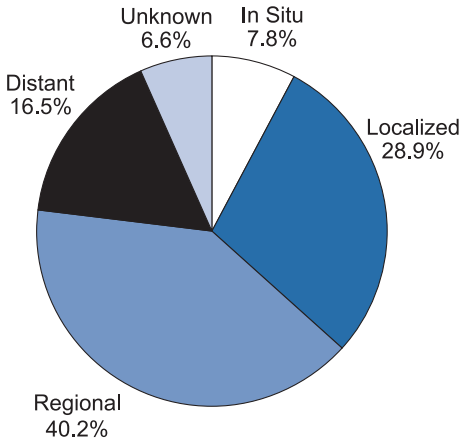
According to the 1999 Behavioral Risk Factor Surveillance System (BRFSS), 43% of males and 41% of females aged 50 and older reported ever having had a sigmoidoscopic or proctoscopic examination. These percentages are higher than the survey results in 1997, of which 33% of males and 26% of females in this age group reported ever having had one of these exams *(Figure 19)*.

Figure 19. Sigmoidoscopic/Proctoscopic Examination*, Persons Aged 50 and Older, South Carolina, 1997 and 1999



*Reported ever having had a Sigmoidoscopic/Proctoscopic exam.
Source: South Carolina Behavioral Risk Factor Surveillance System

Figure 18. Stage at Diagnosis for Colorectal Cancer, South Carolina, 1996-1998



American Cancer Society Guidelines for Early Detection of Colorectal Cancer

Beginning at age 50, men and women at average risk should follow one of the examination schedules below:

1. Fecal Occult Blood Test (FOBT) every year, or
2. Flexible sigmoidoscopy every 5 years,* or
3. FOBT every year and flexible sigmoidoscopy every 5 years* (of these 3 options, the American Cancer Society prefers option 3), or
4. Double-contrast barium enema every 5 years,* or
5. Colonoscopy every 10 years.*

**A digital rectal exam should be performed at the same time as sigmoidoscopy, colonoscopy, or double-contrast barium enema. People who are at increased or high risk for colorectal cancer should talk with a doctor about a different testing schedule.*

LUNG/BRONCHUS CANCER

Incidence

Lung cancer is the second most common cancer diagnosed in South Carolina, accounting for nearly 16% of all cancer cases. The incidence rate of lung cancer is higher for men than for women; however, rates for men are decreasing, while rates for women are increasing.

From 1996 to 1998, a total of 7,607 lung cancers were diagnosed in South Carolina *(Table 7)*. Seven counties (Berkeley, Charleston, Dorchester, Florence, Georgetown, Lexington, Richland) have incidence rates that are significantly higher than the state average *(Figure 20)*.

An estimated 2,695 new cases of lung cancer are expected to be diagnosed in South Carolina in 2002: 1,625 in males and 1,070 in females.

Mortality

Lung cancer is the leading cause of cancer death in South Carolina, accounting for 29% of all cancer deaths between 1994-1998. Black and other males in South Carolina have a higher lung cancer mortality rate than any other race-sex group.

Lung cancer mortality rates for South Carolina females are increasing, while mortality rates for males have begun to decline in recent years *(Figure 21)*.

South Carolina currently ranks 21st in the nation in lung cancer mortality. An estimated 2,390 South Carolinians are expected to die of lung cancer in 2002.

Figure 20. Lung/Bronchus Cancer Incidence Rates by County, South Carolina, 1996-1998

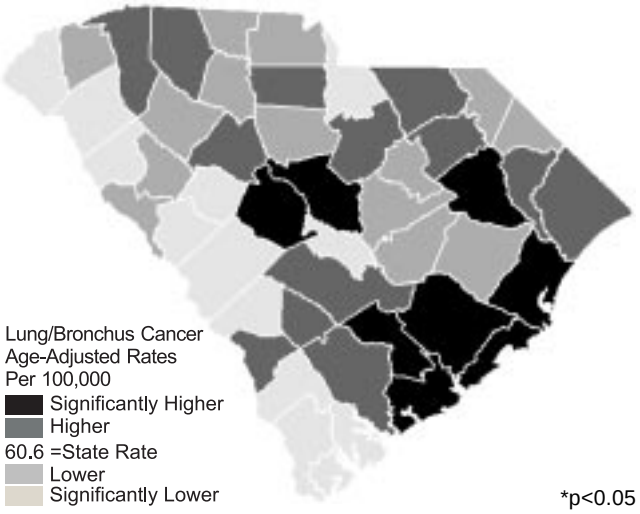
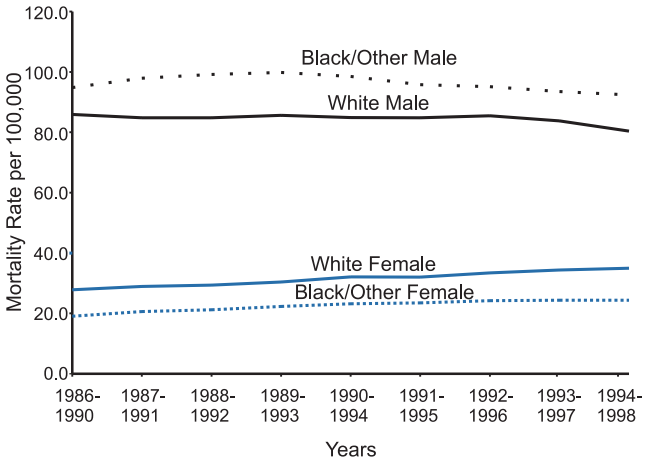


Figure 21. Lung/Bronchus Cancer Mortality Rates* by Race and Sex, South Carolina, 1990-1998



*Rate per 100,000, age-adjusted to the 1970 US standard population.

Risk Factors

Age:
Lung cancer incidence increases with age.

Gender:
The incidence rate of lung cancer is higher for men than women. However, the rates for men are decreasing while the rates for women are increasing.

Lifestyle:
Tobacco use (accounts for almost 87% of all lung cancer cases).

Exposure to environmental (second-hand) tobacco smoke. A non-smoker who is married to a smoker has a 30% greater risk of developing lung cancer than the spouse of a nonsmoker.

Prolonged exposure to air pollution.

Occupation:
Exposure to certain industrial substances, such as arsenic; some organic chemicals; asbestos and radon, particularly for those persons who smoke.

Radiation exposure from occupational, medical, and environmental sources.

Table 7. Lung/Bronchus Cancer Incidence and Mortality in South Carolina

Incidence*	White Male	Black & Other Male	All Males	White Female	Black & Other Female	All Females	Total
Number of New Cases (1996-1998)	3,700	1,056	4,766	2,318	512	2,840	7,607
SC Incidence Rate (1996-1998)	87.4	90.6	88.4	43.0	29.6	40.0	60.6
SEER Incidence Rate (1994-1998)	71.3	108.3	72.6	45.1	46.4	43.5	56.1
Mortality*							
Number of Deaths (1994-1998)	5,402	1,737	7,139	3,126	697	3,823	10,963
SC Mortality Rate (1994-1998)	80.4	92.2	83.0	34.9	24.3	32.4	53.4
US Mortality Rate (1994-1998)	66.6	94.0	68.0	34.9	33.9	34.3	48.7

*Numbers and rates exclude in situ lung cancers. Rates are per 100,000 and age-adjusted to the 1970 US standard population.

Stage of Disease

Early detection of lung cancer is difficult because there is no screening test for lung cancer and the symptoms often do not appear until the cancer is advanced. In South Carolina from 1996-1998, the majority (68.6%) of lung cancer was diagnosed in later stage (i.e. regional and distant) of disease *(Figure 22)*.

Smoking Prevalence in South Carolina

According to 1998 data from the Behavioral Risk Factor Surveillance System (BRFSS), males in South Carolina are more likely to smoke than females, 30% and 20% respectively. The overall prevalence of smoking has increased among both males and females in South Carolina since 1994 *(Figure 23)*.

Prevention

Studies have shown that about 87% of lung cancers are associated with smoking. Therefore, the best strategy for preventing lung cancer is not to begin smoking and to avoid exposure to environmental or second hand smoke. In those who stop smoking, damaged lung tissue often returns to normal.

Also, people who work with potentially cancer-causing chemicals (such as uranium ores, arsenic, vinyl chloride, nickel chromates, coal products, mustard gas, chloromethyl ethers, and asbestos) should take appropriate protective measures to avoid harmful exposure. Asbestos workers who also smoke have a 50 to 90 times greater lung cancer risk than that of people in general.

Figure 22. Stage at Diagnosis for Lung/Bronchus Cancer, South Carolina, 1996-1998

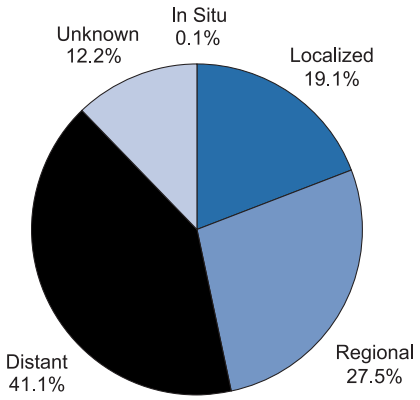
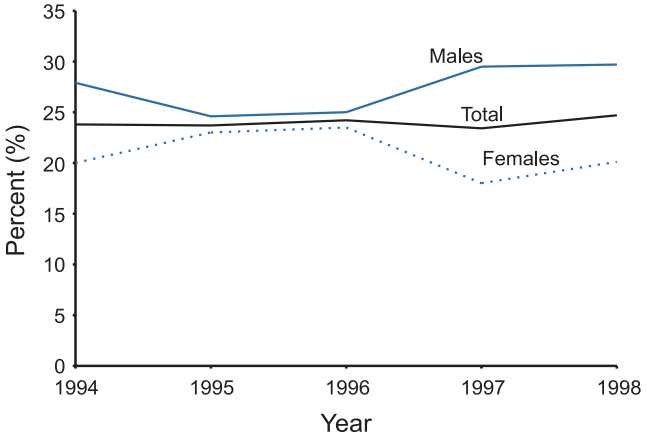


Figure 23. Smoking Prevalence* by Gender, Adults 18 and Older, South Carolina, 1994-1998



*Reported having smoked at least 100 cigarettes in their lifetime and now are current smokers.
Source: South Carolina Behavioral Risk Factor Surveillance System

MELANOMA OF THE SKIN

Incidence

Melanoma of the skin (melanoma) is the sixth most common cancer diagnosed in South Carolina, accounting for 3.4% of cancer cases. In South Carolina, melanoma is more common among whites than other races and males than females.

From 1996-1998, a total of 1,636 melanoma cases were diagnosed in South Carolina *(Table 8)*. There are four counties (Charleston, Greenville, Pickens, Lexington) where incidence rates are significantly higher than the state average *(Figure 24)*.

An estimated 695 new cases of invasive melanoma are expected to be diagnosed in South Carolina in 2002.

Mortality

Melanoma accounted for 1.2% of all cancer deaths in South Carolina between 1994-1998. In recent years, the melanoma mortality rates have decreased for white males and females *(Figure 25)*. This trend follows the national trend for decreasing cancer mortality rates.

South Carolina currently ranks 38th in the nation in melanoma mortality. An estimated 105 South Carolinians are expected to die of melanoma in 2002.

Figure 24. Melanoma Incidence by County, South Carolina, 1996-1998

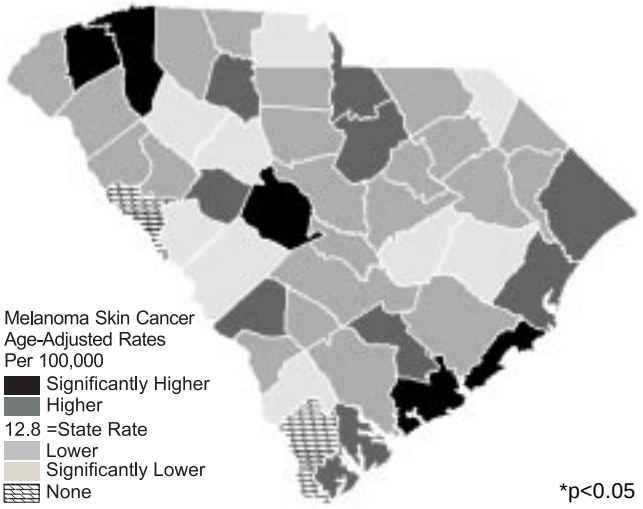
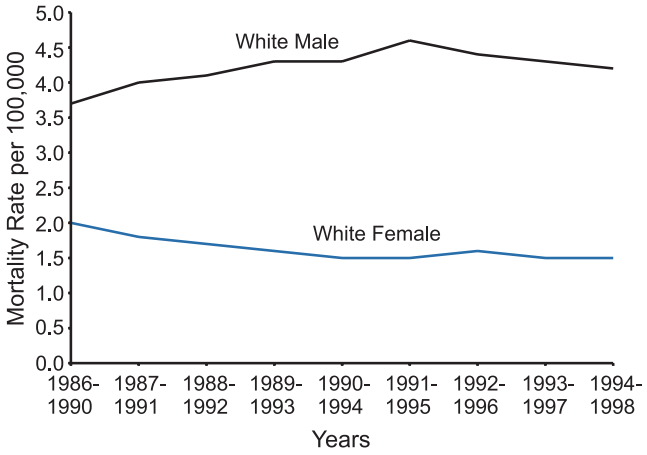


Figure 25. Melanoma Mortality for Whites by Gender, South Carolina, 1990-1998



*Rate per 100,000, age-adjusted to the 1970 US standard population.

Risk Factors

Age:
The risk of melanoma increases with age.

Gender:
Melanoma occurs more frequently in males than females.

Race:
The risk of melanoma is 20 times higher for Caucasians than for African-Americans, due to fair complexion.

Family History:
A family history of melanoma increases risk.

Other:
Excessive exposure to all sources of ultraviolet light, especially sunlight.

Multiple and/or atypical moles.

Weakened immune system.

People with Xeroderma Pigmentosum (XP) have an increased risk.

Table 8. Melanoma of the Skin Incidence and Mortality in South Carolina

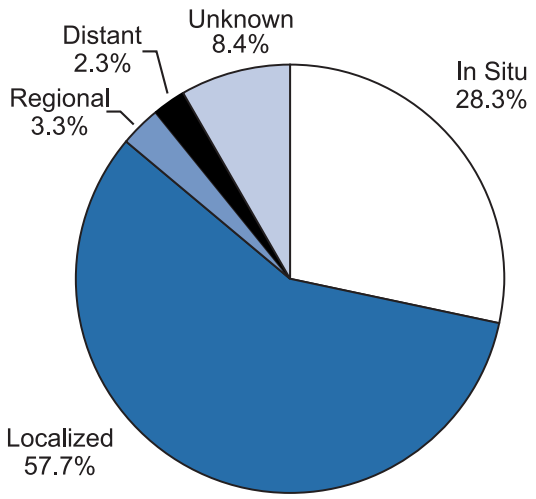
Incidence*	White Male	Black & Other Male	All Males	White Female	Black & Other Female	All Females	Total
Number of New Cases (1996-1998)	856	19	908	674	15	728	1,636
SC Incidence Rate(1996-1998)	19.7	1.5	16.1	13.4	0.8	10.4	12.8
SEER Incidence Rate (1994-1998)	19.6	1.4	17.2	13.5	0.7	11.7	14.1
Mortality*							
Number of Deaths (1994-1998)	290	8	298	139	12	151	449
SC Mortality Rate (1994-1998)	4.2	---	3.4	1.5	---	1.3	2.2
US Mortality Rate (1994-1998)	3.6	0.4	3.2	1.7	0.4	1.5	2.2

*Numbers and rates exclude in situ melanomas. Rates are per 100,000 and age-adjusted to the 1970 US standard population.
Note: Rates are not calculated for fewer than 20 deaths.

Stage of Disease

The majority, 86%, of South Carolinians diagnosed with melanoma from 1996-1998 were diagnosed in early stage (i.e. in situ or localized) of disease *(Figure 26)*. It is important to follow the guidelines for early detection of skin cancer. The earlier skin cancer is diagnosed, the greater the chance for successful treatment.

Figure 26. Stage at Diagnosis for Melanoma of the Skin, South Carolina, 1996-1998



Prevention/Detection

Limit or avoid exposure to the sun, during the midday hours (10 a.m.-4 p.m.), and other sources of ultraviolet light. Throughout the year wear sunscreen with a solar protection factor (SPF) of 15 or higher, especially on exposed areas of the skin. When outdoors cover as much skin as possible and wear sunglasses and a hat. Limitation of childhood sun exposure is an increasingly important prevention strategy.

It is important to recognize changes in skin growths. To distinguish a melanoma from a normal mole, use the **ABCD Rule**:

A-Asymmetry: One half of the mole does not match the other half.

B-Border: The edges of the mole are irregular, ragged or notched.

C-Color: The color of the mole is not the same. There may be differing shades of tan, brown, or black, and sometimes patches of red, blue, or white.

D-Diameter: The mole is wider than 6 millimeters (about ¼ inch) or is growing larger.

American Cancer Society Guidelines for the Early Detection of Melanoma

***Ages 40 and older*:** A skin examination by a health care professional every year and monthly self-examination.

***Ages 20-39*:** A skin examination by a health care professional every three years and monthly self-examination.

PROSTATE CANCER

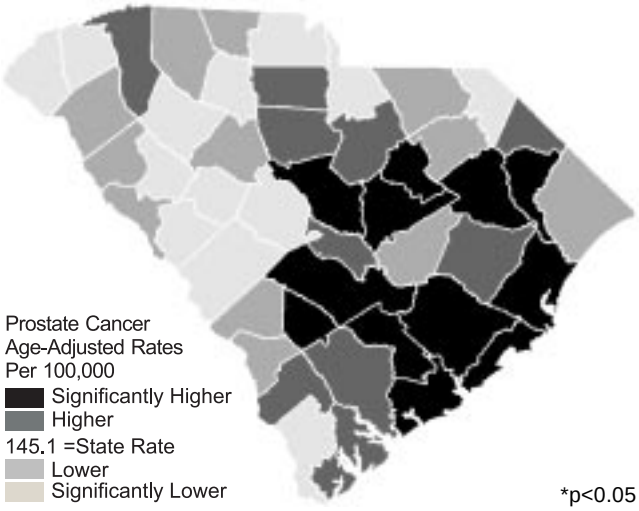
Incidence

Prostate cancer is the most commonly diagnosed cancer among men in South Carolina, regardless of race, accounting for 30% of all male cancer cases. From 1996-1998, a total of 7,748 prostate cancer cases were diagnosed in South Carolina, with the majority, 67%, occurring in white males *(Table 9)*. However, black and other males in South Carolina are over 70% more likely to be diagnosed with prostate cancer than white males.

There are many counties in the eastern and southern part of the state where incidence rates are significantly higher than the state average *(Figure 27)*.

An estimated 2,905 new cases of prostate cancer are expected to be diagnosed among South Carolina men in 2002.

Figure 27. Prostate Cancer Incidence Rates by County, South Carolina, 1996-1998

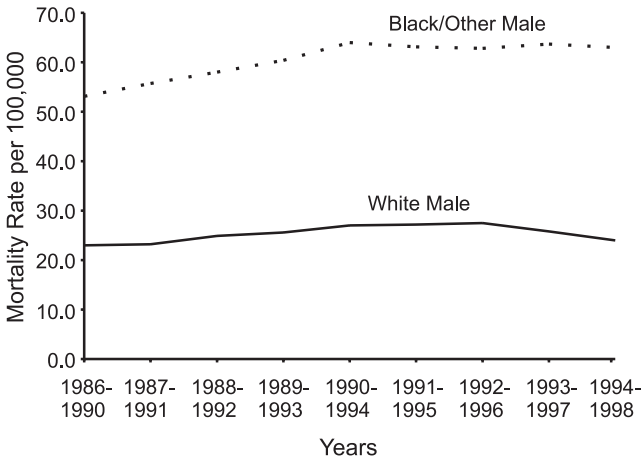


Mortality

Prostate cancer is the second leading cause of cancer deaths among South Carolina men, following lung cancer deaths. Prostate cancer accounted for 13% of all cancer deaths in males between 1994-1998. In recent years, prostate cancer mortality rates have begun to decline among both white and black and other males *(Figure 28)*.

South Carolina has one of the highest prostate cancer mortality rates in the nation, currently ranking 3rd in the nation in prostate cancer mortality. An estimated 495 men in South Carolina are expected to die of prostate cancer in 2002.

Figure 28. Prostate Cancer Mortality Rates* by Race, South Carolina, 1990-1998



*Rate per 100,000, age-adjusted to the 1970 US standard population.

Risk Factors

Age:
Risk increases with age; over 90% of all prostate cancers are diagnosed in men over age 55.

Race:
Black men have an increased risk. Prostate cancer occurs 70% more often in black men than in white men.

Family History:
A family history increases a man's risk of getting prostate cancer.

Genetic predisposition may be responsible for 5-10% of prostate cancers.

Lifestyle:
A diet high in fat and low in fruits, vegetables and grains increases risk.

Table 9. Prostate Cancer Incidence and Mortality in South Carolina

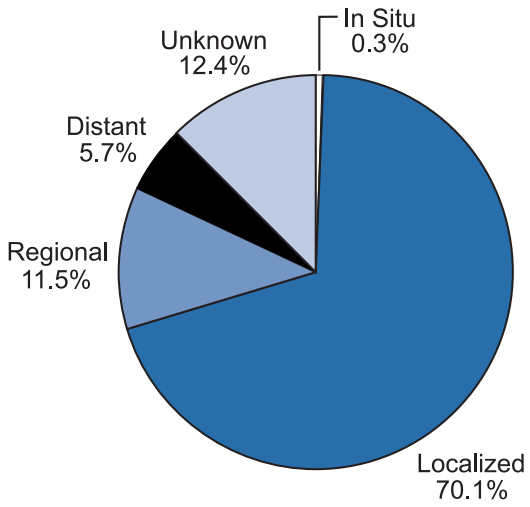
Incidence*	White Male	Black & Other Male	All Males	White Female	Black & Other Female	All Females
Number of New Cases (1996-1998)	5,177	2,418	7,748	---	---	---
SC Incidence Rate (1996-1998)	123.0	213.4	145.1	---	---	---
SEER Incidence Rate (1994-1998)	136.6	230.8	142.0	---	---	---
Mortality*						
Number of Deaths (1994-1998)	1,483	1,149	2,632	---	---	---
SC Mortality Rate (1994-1998)	24.0	63.0	32.6	---	---	---
US Mortality Rate (1994-1998)	21.7	52.1	23.7	---	---	---

*Numbers and rates exclude in situ prostate cancers. Rates are per 100,000 and age-adjusted to the 1970 US standard population.

Stage of Disease

Unlike many other cancers, prostate cancer often grows very slowly. Therefore, the majority of prostate cancers are diagnosed in early stage (i.e. in situ or localized) of the disease. In South Carolina from 1996-1998, over 70% of prostate cancers were diagnosed in early stage *(Figure 29)*.

Figure 29. Stage at Diagnosis for Prostate Cancer, South Carolina, 1996-1998



Prostate Cancer Screening in South Carolina

To date there is no national data and only limited state data available on prostate cancer screening. The first data on prostate cancer screening in South Carolina is being collected in 2001. According to this preliminary data from the 2001 Behavioral Risk Factor Surveillance System (BRFSS), 79.7% of males aged 50 and older in South Carolina report that they have ever had the prostate specific antigen (PSA) test.

Prevention/Detection

There is no known way to prevent prostate cancer. Many risk factors such as age, race, and family history are beyond control; however, managing diet may help to reduce prostate cancer risk. The two screening tools used for the early detection of prostate cancer are the prostate specific antigen (PSA) test and the digital rectal examination. Men should discuss prostate cancer screening options with their health care professional.

American Cancer Society Guidelines for the Early Detection of Prostate Cancer

Males aged 50 and older who have at least a 10-year life expectancy should talk with their health care professional about having a digital rectal examination of the prostate gland and a prostate specific antigen (PSA) blood test every year. Males who are at high risk for prostate cancer (African-Americans or males who have a history of prostate cancer in close family members) should consider beginning these tests at an earlier age.

CHILDHOOD CANCER

Childhood Cancer in South Carolina

Cancers in children and young adults account for only 0.3% of all cancers diagnosed in the United States.

Although rare, cancer is still the leading cause of death from disease in children under 15, second only to accidents in most age groups. However, because of significant advances in treatment and supportive care, mortality rates have declined and 5-year survival rates have increased almost 40% since the 1960s[3].

Approximately 150 children and young adults in South Carolina under the age of 20 will be diagnosed with cancer in 2002. From 1996 to 1998 in South Carolina, a total of 309 cancers were diagnosed among children ages 0-14, while 129 cancers were diagnosed among young adults ages 15-19 *(Table 10)*.

Male children ages 0-14 were more likely to be diagnosed with cancer than female children of the same age in South Carolina. However, among young adults ages 15-19, females have a higher incidence rate than males.

White children in South Carolina are more likely to be diagnosed with cancer than black and other children regardless of age. Overall, the incidence of childhood cancer is lower in South Carolina than in the nation.

The anatomical site of the primary tumor is used to categorize cancer among adults, while childhood cancers are classified primarily by histology into twelve major categories using the International Classification of Childhood Cancers (ICCC). Figure 30 presents the distribution of childhood cancers in South Carolina from 1996-1998 by ICCC grouping.

Three Major Categories of Childhood Cancer

Leukemia:

Leukemia is the most common cancer among children, affecting approximately 2,700 children under age 15 in the United States each year. It is more common in males than in females. The most common form of leukemia among children is acute lymphoblastic leukemia (ALL), which constitutes approximately 75% of all childhood leukemia. Children less than 5 years of age have the highest rates of ALL and as age increases the rates of ALL decrease. Hispanics, Filipinos, and Chinese have the highest rates of ALL in the United

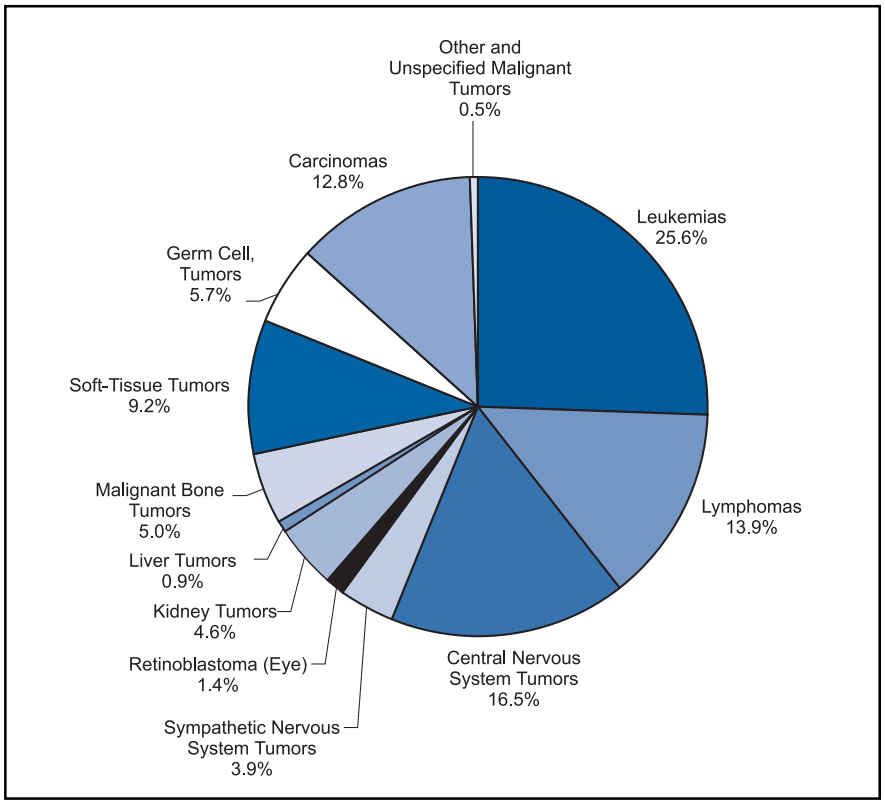


Figure 30. The Distribution of Childhood Cancers by ICCC Grouping, South Carolina, 1996-1998.

Table 10. Incidence of Childhood Cancer in South Carolina, 1996-1998

Incidence*	0-14 Years			15-19 Years		
	No. of Cases	SC Rate 1996-1998	SEER Rate 1994-1998	No. of Cases	SC Rate 1996-1998	SEER Rate 1994-1998
Male	174	14.3	15.4	64	15.0	20.5
Female	134	11.4	13.4	64	15.6	19.3
White	199	13.4	14.8	94	18.2	21.1
Black/Other	104	11.3	12.0	33	10.3	13.8
Total	309	12.9	14.4	129	15.4	19.9

*Numbers and rates exclude in situ cancers. Rates are per 100,000.

States, followed by whites. The lowest rates are found among blacks.

In South Carolina between 1996-1998 a total of 112 leukemia cases were diagnosed among children and young adults ages 0-19. Leukemia accounted for 26% of childhood cancers diagnosed in South Carolina during these years *(Figure 30)*. Approximately 40 children and young adults in South Carolina under the age of 20 will be diagnosed with leukemia in 2002.

Central Nervous System:

Central nervous system (CNS) tumors and associated neoplasms are the second most common type of cancer in children, accounting for over 20% of childhood cancers nationally. The highest incidence rates of CNS tumors occur among infants and children under 8 years of age.

Between 1996-1998, a total of 72 CNS tumors were diagnosed among those under 20 years of age. CNS tumors accounted for 16% of childhood cancers diagnosed during these years *(Figure 30)*. Approximately 25 children and young adults in South Carolina 0-19 years of age will be diagnosed with a CNS tumor or other associated neoplasm in 2002.

Lymphomas:

Lymphoma is the third most common form of childhood cancer, accounting for more than 10% of cases among children under age 15, and more than 15% of cases under age 20 nationally. Lymphomas are divided into two general types: Hodgkin's disease and Non-Hodgkin's Lymphoma (NHL). Incidence rates of Hodgkin's disease increase with age and males generally account for the majority of cases. Incidence rates of NHL are higher among children younger than age 10.

In South Carolina from 1996-1998, a total of 61 lymphomas were diagnosed among children and young adults ages 0-19. Lymphomas accounted for 14% of childhood cancers diagnosed during these years *(Figure 30)*. Approximately 20 children and young adults in South Carolina 0-19 years of age will be diagnosed with lymphoma in 2002.

Risk Factors for Childhood Cancer

Genetic factors and certain prenatal and postnatal exposures can increase the risk of developing some childhood cancer, but many of the causes of childhood cancers remain unknown. Infrequently occurring chromosomal disorders and clinical syndromes place some children at higher risk of developing cancer. In addition there are some childhood cancers that result from inherited genetic mutations. Prenatal exposure to diagnostic irradiation increases the risk of childhood cancer. Postnatal exposures to ionizing radiation can also increase risk. In addition, survivors of childhood cancer who received chemotherapy and/or radiation are at increased risk of subsequent cancers.

SPECIAL TOPIC: ORAL/PHARYNX CANCER

Oral/pharynx cancer accounts for two to four percent of all cancers diagnosed annually in the United States[4]. More than 40 years ago, males were five times more likely than females to be diagnosed with oral/pharynx cancer. Today, oral/pharynx cancer is twice as common in men as in women. The increased use of tobacco among women is the main reason for this change in cancer rates[4].

Incidence in South Carolina

Oral/pharynx cancer is the ninth most common cancer occurring in South Carolina. From 1996-1998 in South Carolina, a total of 1,389 oral/pharynx cancers were diagnosed. The majority (67%) occurred in males. Black/other males in South Carolina had the highest incidence of oral/pharynx cancer, more than any other race-sex group *(Table 11)*.

The following sites make up oral/pharynx cancer: lip, oral cavity (tongue, salivary gland, gum, floor or mouth, and tonsil), and pharynx (nasopharynx, oropharynx, hypopharynx) Figure 31 shows the site breakdown for oral/pharynx cancers diagnosed in South Carolina from 1996 to 1998. The top three sites of the oral cavity include the tongue (22.1%), gum (15.4%), and tonsil (13.0%) *(Figure 31)*.

There are several counties in South Carolina that have oral/pharynx cancer incidence rates higher than the state average. Two counties (Charleston, Richland) have oral/pharynx cancer incidence rates that are significantly higher than the state average *(Figure 32)*.

An estimated 480 oral/pharynx cancers are expected to be diagnosed in South Carolina in 2002, with approximately 310 cases occurring in males and 170 cases in females.

Figure 31. Sites of
Oral/Pharynx Cancer, South Carolina, 1996-1998

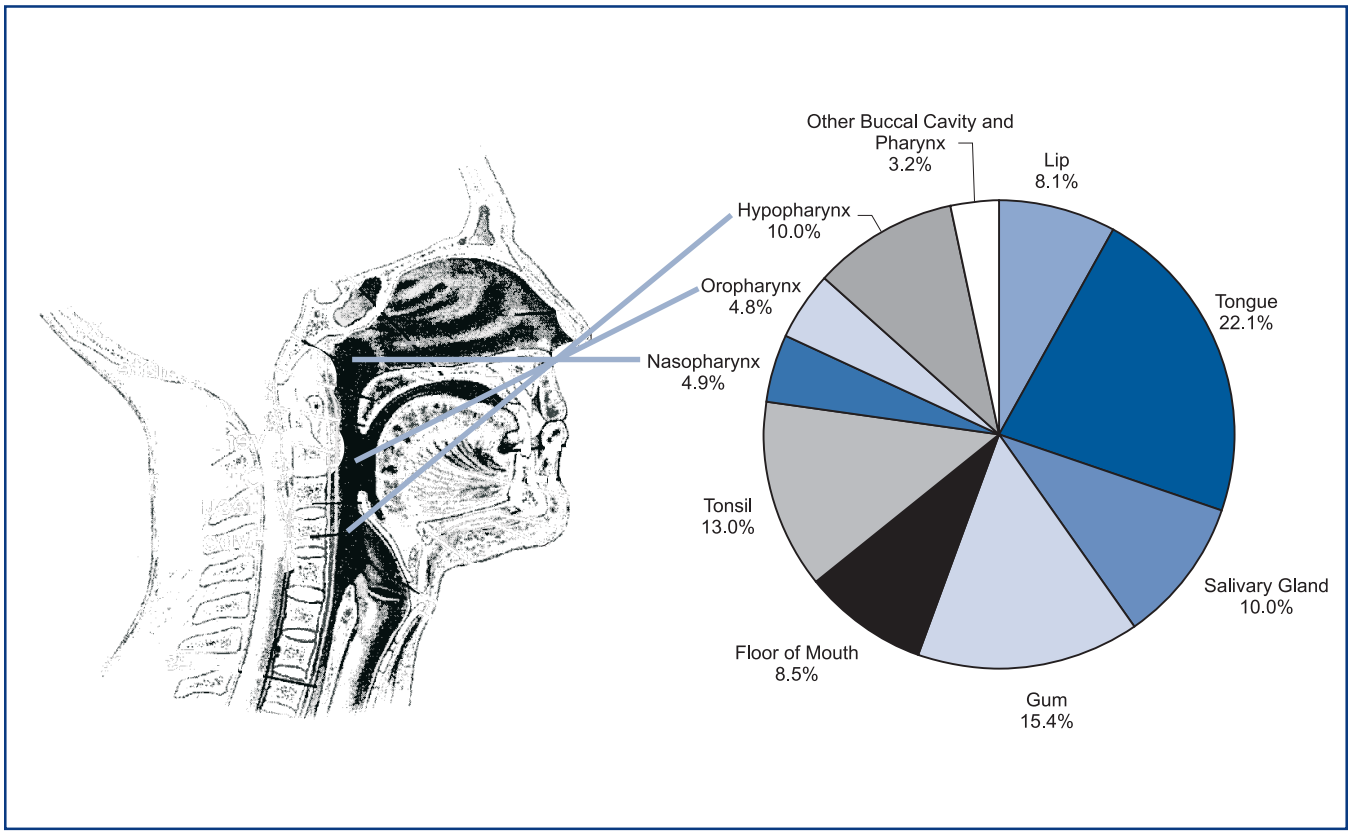


Table 11. Oral/Pharynx Cancer Incidence and Mortality, South Carolina, 1996-1998

Incidence*	White Male	Black & Other Male	All Males	White Female	Black & Other Female	All Females	Total
Number of New Cases (1996-1998)	643	272	928	355	102	461	1,389
SC Incidence Rate (1996-1998)	15.1	21.7	16.9	6.5	5.8	6.5	11.2
SEER Incidence Rate (1994-1998)	14.3	20.5	14.8	5.8	6.1	5.8	9.9
Mortality*							
Number of Deaths (1994-1998)	279	234	513	179	66	245	758
SC Mortality Rate (1994-1998)	4.2	11.8	5.9	1.8	2.2	1.9	3.7
US Mortality Rate (1994-1998)	3.6	7.6	3.9	1.4	1.9	1.4	2.6

*Numbers and rates exclude in situ oral/pharynx cancers. Rates are per 100,000 and age-adjusted to the 1970 US standard population.

Mortality in South Carolina

According to national mortality statistics for 1994-1998, South Carolina ranks second in the nation in oral/pharynx cancer mortality, with an average annual age-adjusted oral/pharynx cancer mortality rate of 3.7 per 100,000, 42% higher than the average US rate of 2.6 per 100,000.

From 1994-1998, a total of 758 oral/pharynx cancer deaths occurred in South Carolina. Males were more than twice as likely to die from oral/pharynx cancer as females. Black/other males have the highest oral/pharynx cancer mortality rate of any race-sex group.

During the last few years, oral/pharynx cancer mortality rates have remained relatively the same for white and black/other females in South Carolina. However, mortality rates for white males have declined, while rates for black/other males have increased *(Figure 33)*.

An estimated 130 oral/pharynx cancer deaths are expected to occur in South Carolina in 2002.

Figure 32. Oral/Pharynx Cancer Incidence Rates by County, South Carolina,1996-1998

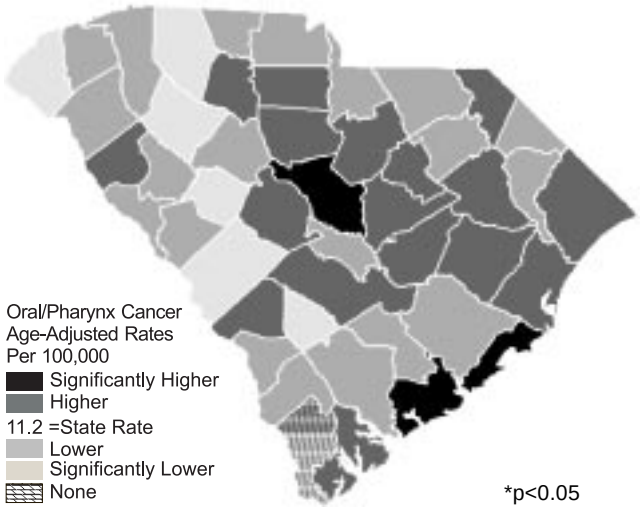
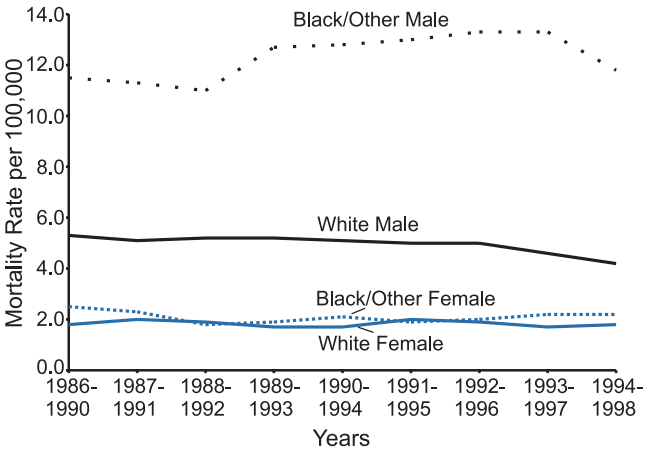


Figure 33. Oral/Pharynx Cancer Mortality Rates* by Race and Gender, South Carolina, 1990-1998



*Rate per 100,000, age-adjusted to the 1970 US standard population.

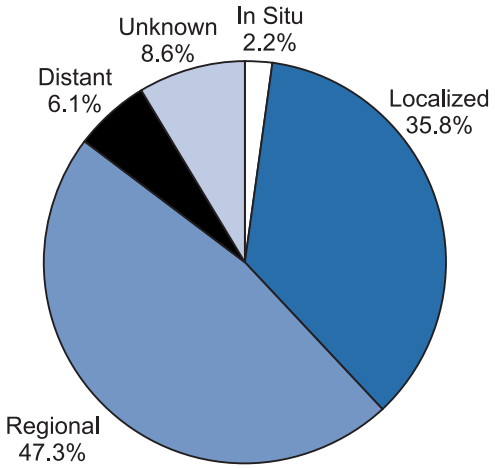
ORAL/PHARYNX CANCER (cont.)

Early Detection

In South Carolina, the majority (53.4%) of oral/pharynx cancers were diagnosed in late stage (i.e. regional or distant) disease. Another 38% of oral/pharynx cancers were diagnosed in early stage (i.e. in situ and localized) disease, while 8.6% were unstaged *(Figure 34)*.

Some oral/pharynx cancers may not cause symptoms until after reaching an advanced stage of disease. However, many cancers of the oral cavity and pharynx can be found early, during routine screening examinations by a doctor or dentist, or by self-examination. Finding these cancers early helps to increase the likelihood of successful treatment and survival.

Figure 34. Stage at Diagnosis for Oral/Pharynx Cancer, South Carolina, 1996-1998



American Cancer Society Guidelines for the Early Detection of Oral/Pharynx Cancer

Regular dental checkups that include an examination of the entire mouth are important in the early detection of oral/pharynx cancers and precancerous conditions. The American Cancer Society also recommends that primary care doctors examine the mouth and throat as part of a routine cancer-related checkup.

Risk Factors

Age:
Risk increases with age, especially after age 40.

Gender:
Oral/pharynx cancer is twice as common in men as in women.

Tobacco use:
About 90% of people with oral/pharynx cancer use tobacco, and the risk of developing these cancers increases with the amount smoked or chewed and duration of the habit.

Smokers are six times more likely than non-smokers to develop these cancers.

Alcohol use:
Alcohol consumption strongly increases a person's risk of developing oral/pharynx cancer. These cancers are about six times more common in drinkers than in nondrinkers. People who smoke and also drink alcohol have a much higher risk of cancer than those using only alcohol or tobacco alone.

Ultraviolet light:
More than 30% of patients with cancers of the lip have outdoor occupations associated with prolonged exposure to sunlight.

Vitamin deficiency:
Vitamin A deficiency is associated with an increased risk.

Plummer-Vinson syndrome:
A rare combination of iron deficiency with abnormalities of the tongue, fingernails, esophagus, and red blood cells. However, this syndrome is very rare and is responsible for only a very small number of oral cancers.

Human Papillomavirus (HPV):
HPV may be a factor that contributes to the development of oral/pharynx cancers in around 20% of people. HPV is passed between partners during sexual intercourse.

Signs/Symptoms of Oral/Pharynx Cancer

Many of these signs and symptoms may be caused by other cancers or by less serious health problems. If any of these conditions lasts longer than two weeks, it is important to see a medical doctor or dentist immediately.

- A sore in the mouth that does not heal (most common symptom);
- Pain in the mouth that doesn't go away (also very common);
- A persistent lump or thickening in the cheek;
- A persistent white or red patch on the gums, tongue, tonsil, or lining of the mouth;
- A sore throat or a feeling that something is caught in the throat that doesn't go away;
- Difficulty chewing or swallowing;
- Difficulty moving the jaw or tongue;
- Numbness of the tongue or other area of the mouth ;
- Swelling of the jaw that causes dentures to fit poorly or become uncomfortable;
- Loosening of the teeth or pain around the teeth or jaw;
- Voice changes;
- A lump or mass in the neck; and
- Weight loss.

Survival

Survival depends in large part on the stage of the cancer at the time of diagnosis. Generally, a cancer diagnosed at a later stage means a lower survival rate. Looking at all stages combined, a total of 82% of oral/pharynx cancer patients will survive at least one year after diagnosis. The 5-year survival rate for oral/pharynx cancer is 56% and the 10-year survival rate is 39%. While survival rates have improved for many cancers over the last 20 years, oral/pharynx cancer survival rates have not improved much[5].

Treatment for Oral/Pharynx Cancer

Oral/pharynx cancers are treated using three main approaches:

- Surgery: removal of the tumor and nearby tissues, usually including lymph nodes.
- Radiation therapy: use of high-energy rays or particles to destroy cancer cells or slow their rate of growth.
- Chemotherapy: use of drugs that kill cancer cells throughout the body.

These treatments can be administered alone or either in combination, depending on the stage of the cancer at the time of diagnosis.

Follow-Up After Treatment for Oral/Pharynx Cancer

About 15% of patients diagnosed with oral/pharynx cancer will have another cancer in nearby areas such as the larynx, esophagus, or lung. An additional 10% to 40% of these newly diagnosed patients will develop cancer of one of these organs or a second oral/pharynx cancer at a later time. For this reason, follow-up examinations are very important for oral/pharynx cancer patients. These patients should have follow-up exams for the rest of their lives and avoid risk factors that can increase the risk of developing a second cancer.

MODIFIABLE RISK FACTORS

Tobacco Use

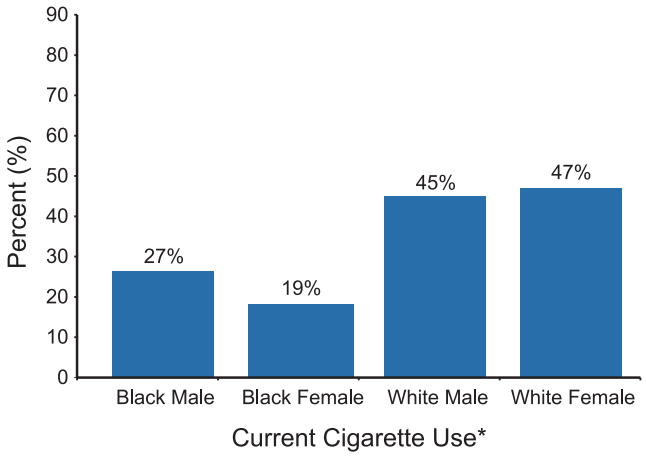
Smoking is the most preventable cause of disease, disability, and death in our society. Tobacco use contributes to the development of heart disease, cerebrovascular disease, bronchitis, emphysema, as well as cancer, accounting for at least 30% of all cancer deaths[6].

However, approximately 48 million adults in the United States continue to smoke[6]. In addition to being responsible for 87% of all lung cancer cases, smoking is also associated with cancers of the mouth, pharynx, larynx, esophagus, pancreas, uterine cervix, kidney and bladder.

Lung cancer mortality rates are about 23 times higher for current male smokers and 13 times higher for current female smokers compared to lifelong never-smokers.

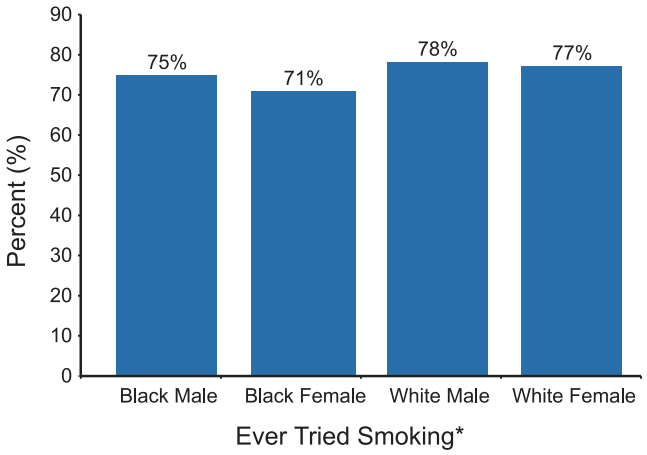
The use of chewing tobacco and cigars has increased in recent years. Since 1993, cigar use in the United States has increased nearly 50 percent. Chewing tobacco, cigars, and pipe smoking have been thought to be safer alternatives to cigarette smoking[6]. However, all tobacco use increases the risk of serious health problems. The bottom line is: No tobacco is safe tobacco.

Figure 36. Percentage of High School Youth Who Currently Smoke, by Gender and Race, South Carolina, 1999.



*Reported smoking cigarettes on one or more days in the past month.
Source: South Carolina Youth Risk Behavior Surveillance System

Figure 35. Percentage of High School Youth Who Have Ever Tried Smoking, by Gender and Race, South Carolina, 1999



*Reported ever having used cigarettes.
Source: South Carolina Youth Risk Behavior Surveillance System

Tobacco Use Among South Carolinians

According to the 1998 Behavioral Risk Factor Surveillance System, an estimated 25% of South Carolina adults smoke. Males are more likely to smoke than females, 30% and 20% respectively.

People who quit smoking live longer than people who continue to smoke, regardless of age. Quitting smoking decreases the risk of developing many health problems. According to the 1998 Behavioral Risk Factor Surveillance System, 46% of adults in South Carolina who were current smokers reported that they tried to quit smoking for at least one day during the past year.

Tobacco Use Among South Carolina Youth

According to the 1999 Youth Risk Behavior Surveillance System, 75% of high school youth reported having ever tried smoking. White males (78%) and females (77%) were more likely to have tried smoking than black males (75%) and females (71%) *(Figure 35)*.

During 1999, 36% of youth reported current cigarette use. White female youth in South Carolina had the highest percentage of current cigarette use (47%) than any other race-sex group *(Figure 36)*.

Diet and Nutrition

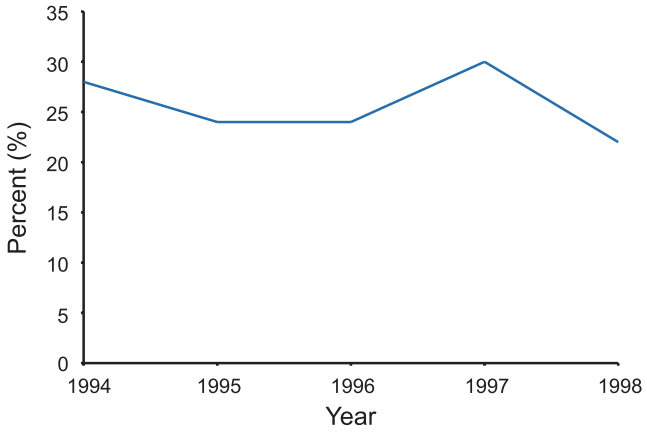
Research suggests approximately 30% of all cancer deaths in the United States each year are due to dietary factors. The dietary factors that can affect cancer risk include, type of food, food preparation methods, portion sizes, food variety, and overall caloric balance.

Diets high in fat have been associated with an increased risk of colon/rectum, prostate, and uterine cancers. While alcohol consumption has been shown to increase the risk of developing cancers of the mouth, esophagus, pharynx, larynx, and liver. Cancer risk can be reduced by an overall dietary pattern that includes a high proportion of plant foods (fruits, vegetables, grains, and beans), limited amounts of high-fat foods (meats and dairy products), and limited consumption of alcoholic beverages.

Diet and Nutrition in South Carolina

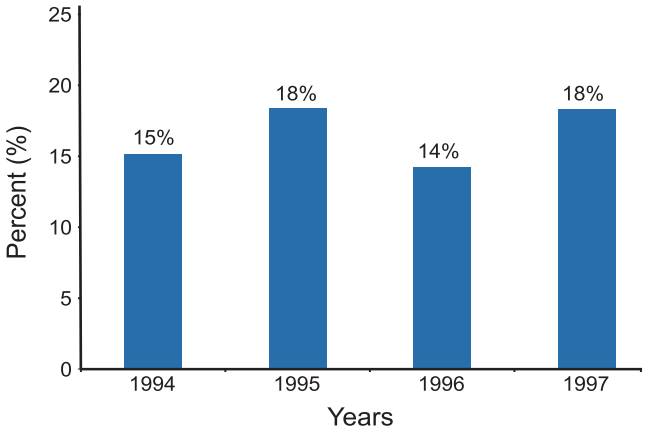
According to the 1998 Behavioral Risk Factor Surveillance System, only 22% of South Carolina adults ate the recommended five or more servings of fruits and vegetables per day. This represents the lowest prevalence reported between 1994-1998. The highest prevalence reported was 30% in 1997 *(Figure 37)*.

Figure 37. Percentage of Adults Eating Five or More Servings of Fruits and Vegetables Per Day, South Carolina, 1994-1998



Source: South Carolina Behavioral Risk Factor Surveillance System

Figure 38. Percentage of Adults Who Reported Participating in Physical Activity*, South Carolina, 1994-1997



*Three or more times per week for 20 or more minutes, regardless of functional capacity.
Source: South Carolina Behavioral Risk Factor Surveillance System

Physical Activity

An imbalance between caloric intake and physical activity can lead to being overweight or obese, which increases the risk of developing some cancers. Therefore, achieving and staying within a healthy weight range is beneficial. The energy expended in physical activity can counter caloric intake and prevent weight gain. **The American Cancer Society recommends moderate physical activity for at least 30 minutes on most days of the week.** With regular physical activity and maintainance of a healthy weight, the risk of developing some cancers and other chronic diseases can be reduced.

Physical Activity in South Carolina

According to the 1997 Behavioral Risk Factor Surveillance System (BRFSS), only 18% of South Carolina adults participated in regular physical activity. According to the BRFSS, regular physical activity is defined as 20 or more minutes, three or more times per week, regardless of functional capacity. Between 1994-1997 the prevalence of South Carolina adults participating in regular physical activity fluctuated between 14% and 18% *(Figure 38)*.

THE AMERICAN CANCER SOCIETY

The American Cancer Society is the nationwide community-based voluntary health organization dedicated to eliminating cancer as a major health problem by preventing cancer, saving lives from cancer, and diminishing suffering from cancer through research, education, advocacy, and service. To do this, the American Cancer Society has set challenge goals to be achieved by 2015. These goals are to reduce cancer mortality by 50%, to reduce cancer incidence by 25%, and to improve the quality of life for all cancer survivors. These ambitious objectives are interdependent goals, which require public and private collaborative partnerships; and are the shared vision of the American Cancer Society, other public and private health organizations, corporations and community coalitions.

Because cancer affects everyone at every level of our society, we maintain local units in thousands of communities across the country. That means we're right in your backyard, working with local universities, hospitals, and research institutions to pursue the cure. We're your friends and neighbors, informing you about cancer prevention and detection so that you will never know the devastating effects of this disease.

Prevention and Detection

Scientific evidence suggests that about one-third of the 553,400 cancer deaths expected to occur this year will be related to unhealthy behaviors. In addition, many more lives could be saved if people took advantage of screenings to detect cancer at its earliest, most treatable stage. In fact, prevention through smoking cessation, better nutrition, and increased physical activity as well as early detection through cancer screening examinations are two of the most important and effective strategies for reaching the American Cancer Society goals.

Community Outreach

Through community outreach programs and public awareness campaigns, we make you aware of how to reduce your risk of cancer and how and when to take advantage of cancer screenings. And we work closely with your school systems to encourage health education at all grade levels to promote healthy behavior throughout childhood, when habits are formed.

Advocacy Efforts in South Carolina

An important part of the American Cancer Society's fight against cancer is sound public health policy. That means advocating for government funding of cancer research, tobacco control, and other important programs. In South Carolina, the task was made more difficult this session because lawmakers faced what might have been one of the most grueling efforts to reconcile budget deficits in the state's history.

Governor Jim Hodges called for a 15% cut in all state agency budgets, and South Carolina's House and Senate faced the difficult task of deciding what should be eliminated. This meant tobacco control funding was at stake as well as funding that was needed to match federal funding from the Breast and Cervical Cancer Treatment Act, which would provide treatment for women diagnosed with breast or cervical cancer. Despite the fact that there was to be no funding for new prevention and early detection programs, both of these programs were funded thanks to efforts of advocates.

Community Programs

College Scholarship

The American Cancer Society Southeast Division's College Scholarship Program is designed to provide cancer survivors the opportunity to reach their academic potential and their career dreams by earning a college degree. It is the Southeast's first scholarship opportunity exclusively for students with a history of cancer. Since 1999 we have awarded 116 scholarships in the amount of $1,000 to survivors of childhood cancer in Georgia, North Carolina and South Carolina. College scholarship awardees must meet the following criteria: Diagnosis of cancer before age 21; Accepted to an accredited two or four-year college/university or vocational/technical school, (also available to graduate students); Legal resident of Georgia, North Carolina or South Carolina.

Community Development Grants

The American Cancer Society Southeast Division has allocated Community Development Grant dollars for local programs, which are beyond services currently offered in the community. These grants are intended to support local projects that are consistent with the cancer

control objectives of the American Cancer Society, yet demonstrate a unique approach to meeting an identified need in the local community.

Community Development Grants were awarded for youth tobacco prevention in upstate South Carolina. This area has taken aggressive steps in building collaborations with youth tobacco prevention partners. Reaching out to the Hispanic community in Oconee, South Carolina is the motivation behind the $10,000 American Cancer Society Community Development Grant awarded to the Oconee Family and Community Leaders Cancer Coalition. The grant will provide cancer education and improve access to health services such as mammography to Hispanic women ages 18 and older.

Patient Services

The American Cancer Society offers a range of free programs that provide practical and emotional support for patients, their families, their caregivers, and their community from the time of diagnosis throughout life. Following is a brief summary of some programs offered by the American Cancer Society. Please call 1-800-ACS-2345 or visit our website, www.cancer.org for more information.

Reach to Recovery

A visitation program of the American Cancer Society for women who have a personal concern about breast cancer. Carefully selected and trained volunteers who have successfully adjusted to breast cancer and its treatment provide information and support to women newly diagnosed with the disease. This program is designed to help people cope with their breast cancer experience.

Look Good . . . Feel Better

This free program helps women cancer patients improve their appearance and self-image by teaching them hands-on beauty techniques that overcome the appearance related side effects of chemotherapy and radiation treatments.

Man to Man

This group program provides information about prostate cancer and related issues for men and their partners. Trained volunteers who are prostate cancer survivors, visit men who have been diagnosed with prostate cancer for moral support before or after treatment.

I Can Cope

This patient and family cancer education program consists of a series of classes, often held at a local hospital. Doctors, nurses, social workers, and community representatives provide information about cancer diagnosis and treatment, as well as assistance in coping with the challenges of a cancer diagnosis.

Road to Recovery

This program provides free transportation by volunteer drivers for cancer patients to and from cancer treatment when family and other appropriate resources are not available.

Hope Lodge

The American Cancer Society's Hope Lodge directly answers critical financial, emotional and access-to-care needs of cancer patients and their family members as they undergo outpatient cancer treatment away from home. Hope Lodges provide a warm and caring "home-away-from-home" environment free of charge to cancer patients and their loved ones, for as long as needed during lengthy outpatient treatment. Currently there is an eight-suite Hope Lodge in historic Charleston that was the first Lodge in the country when it opened its doors in l970.

BEST CHANCE NETWORK

Breast and Cervical Cancer Early Detection in South Carolina

The Best Chance Network (BCN) in South Carolina is part of a national effort funded by the Centers for Disease Control and Prevention to provide free breast and cervical cancer screening services to underserved women. The South Carolina Department of Health and Environmental Control (DHEC) receives funding to implement this program statewide to women ages 47-64 who meet income and insurance guidelines. Free Pap smears, pelvic exams, clinical breast exams and mammograms are offered by private physicians and nurse practitioners.

DHEC contracts with the American Cancer Society, Southeast Division to deliver public education, professional education and coordinate services through provider offices.

The goal of this program is to detect these cancers early when they are most effectively treated to prevent unnecessary mortality. The BCN program helps to address the gap in preventive services by reaching the underserved women who are least likely to have access to these quality life-saving exams.

Since 1992, the BCN program has screened nearly 50,000 women. All abnormalities detected are followed to ensure timely completion. Of those who completed their cervical follow-up, a significant percentage (53%) were diagnosed at the precursor stage, CIN* I, II, III, and High Grade SIL** *(Figure 39)*. These diagnoses indicate abnormal cervical activity that precedes an invasive cancer diagnoses, like squamous cell carcinoma (SCC).

However, comparing this to completed followup for abnormalities in breast screening, more invasive diagnoses of breast cancer (5%) were detected than carcinoma in-situ (CIS) of the breast (1%) *(Figure 40)*.

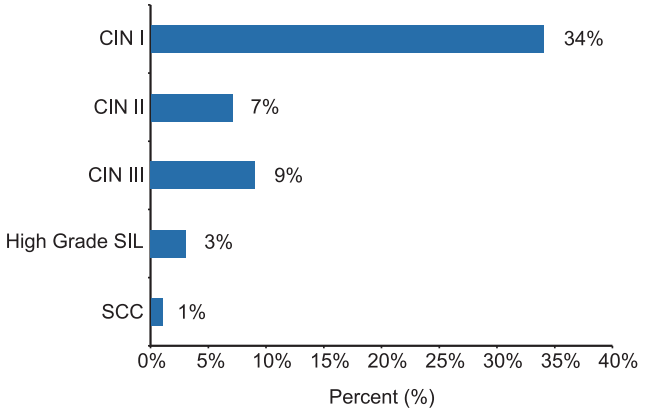
On October 24, 2000, President Clinton signed the Breast and Cervical Cancer Treatment Act into law. This represents a significant milestone for the national program as well as for BCN. Prior to the Act, treatment was provided through in-kind donations of committed medical facilities and physicians.

South Carolina's legislature allocated a 25% match of $750,000 for a total of $3 million in Medicaid coverage to be used toward this important effort. Women screened through the BCN program will now have a complete package of screening and treatment services if pre-cancerous conditions (CIN II, CIN III, CIS) and invasive cancer diagnoses are made. This program has contributed significantly toward reducing the mortality and morbidity due to breast and cervical cancers.

For more information about the Best Chance Network, call 1-800-282-4914.

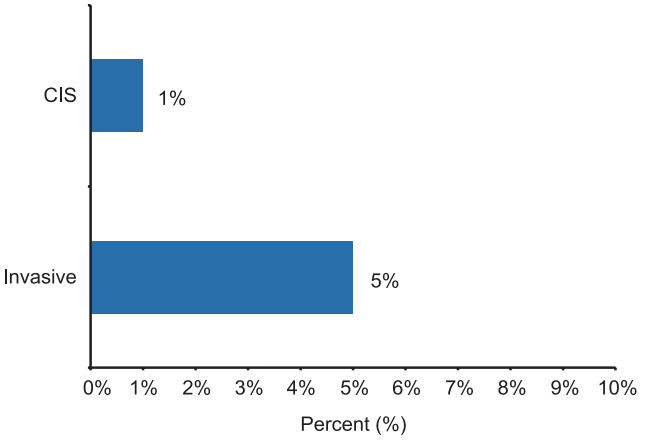
*CIN: Cervical Intraepithelial Neoplasia
**SIL: Squamous Intraepithelial Lesion

Figure 39. Final Diagnoses* for Completions of Follow-up for Cervical Screening Abnormalities, 1992-2001



*CIN: Cervical Intraepithelial Neoplasia
SIL: Squamous Intraepithelial Lesion
SCC: Squamous Cell Carcinoma

Figure 40. Final Diagnoses* for Completions of Follow-up for Breast Screening Abnormalities, 1992-2001



*CIS: Carcinoma In-Situ

AGE-ADJUSTMENT

Age-adjustment to the Year 2000 Population Standard

What is age-adjustment?

Age-adjustment is a procedure that is used to help us compare disease rates in two different populations. Different populations can have different age structures. For example, Florida has a larger number of older adults than South Carolina. When a population has a larger number of older adults, the crude death rate will be higher because older adults have a greater risk of dying. Therefore, if we want to compare Florida's cancer death rate to the cancer death rate in South Carolina, we have to take into account the difference in the age structure of each state's population[7]. Age-adjusting cancer rates will allow us to compare them.

In summary, age-adjustment allows us to:

- Compare disease rates among populations.
- Determine the age distribution of the population being studied.
- Determine the impact of disease on the population.

Why are cancer rates changing?

The population of the United States is changing. As the "baby-boom" generation ages, the number of older adults in the United States is rising. As a nation, we also now have a longer life expectancy and are more susceptible to chronic disease such as cancer[8]. Because of the changing age structure of the United States population, a more representative standard population, one with greater numbers in the older age groups, is needed for age-adjustment[8].

The National Center for Health Statistics recommends using the year 2000 US population as the standard for age-adjustment beginning with 1999 health events. The Department of Health and Human Services issued a mandate to this effect to all federal agencies[9]. Changing to the year 2000 standard population will affect the calculation of age-adjusted rates. The year 2000 standard gives more weight to death rates at older ages, where the mortality is already higher[9]. **Therefore, changing the standard for age-adjustment will cause age-adjusted rates to increase, especially for chronic diseases where risk increases with age.**

How will cancer rates change in South Carolina?

Cancer incidence and mortality rates are expected to increase by as much as 20% with the use of the new 2000 standard[9]. Table 12 *(page 36)* shows 1996-1998 cancer incidence rates by county in South Carolina. The rates are age-adjusted to both the 1970 and 2000 US population standards. Using the new 2000 standard produces higher incidence rates. The South Carolina incidence rate using the 1970 standard is 382.3 per 100,000. The South Carolina incidence rate using the 2000 standard is over 18% higher at 453.3 per 100,000. **This does not mean that more cancer is occurring in South Carolina.** Both rates are based on the same total number of cases (48,518). Using the 2000 standard adjusts the rates based on a new population, which is more like the population today.

In summary, using the new 2000 US standard population for age-adjustment:

- Will begin with 1999 health events.
- Is needed because of the changing age structure of the US population.
- Will increase cancer incidence and mortality rates by as much as 20%.

***Note*:** It is important for the reader to use caution when comparing rates in different data sources. The reader should pay particular attention to the standard population used for age-adjustment so that accurate rate comparisons are made. **Rates that are calculated using different standard populations cannot be compared.**

Table 12. Age-adjusted Cancer Incidence Rates* by County, South Carolina, 1996-1998

County	Number of Cases	Rate Using the 1970 Std.	Rate Using the 2000 Std.
Abbeville	287	292.4	347.6
Aiken	1,369	294.8	352.6
Allendale	139	379.6	447.7
Anderson	2,216	361.8	432.8
Bamberg	223	382.7	455.6
Barnwell	260	355.2	417.9
Beaufort	1,493	401.8	481.8
Berkeley	1,264	426.3	501.5
Calhoun	170	343.8	395.5
Charleston	4,169	449.0	536.9
Cherokee	640	354.8	426.0
Chester	476	386.0	456.8
Chesterfield	529	368.3	428.4
Clarendon	417	386.5	455.6
Colleton	538	406.9	481.2
Darlington	814	361.2	423.5
Dillon	374	369.0	444.0
Dorchester	1,079	481.7	568.7
Edgefield	172	259.4	303.9
Fairfield	324	399.3	469.2
Florence	1,762	433.2	510.6
Georgetown	910	465.6	552.5
Greenville	4,669	382.1	454.6
Greenwood	891	364.7	440.3
Hampton	223	341.1	402.7
Horry	2,550	394.0	470.0
Jasper	117	196.1	244.1
Kershaw	723	420.8	497.9
Lancaster	675	327.2	385.2
Laurens	751	317.8	379.7
Lee	235	360.8	426.1
Lexington	2,447	404.8	486.9
Marion	514	428.1	508.2
Marlboro	368	361.8	427.3
McCormick	102	290.0	344.8
Newberry	538	386.2	462.0
Oconee	750	292.1	347.0
Orangeburg	1,364	457.1	536.9
Pickens	1,151	327.7	387.3
Richland	3,714	429.6	504.1
Saluda	164	246.6	295.5
Spartanburg	3,159	358.5	420.1
Sumter	1,190	387.8	456.0
Union	416	344.9	400.3
Williamsburg	450	370.7	433.7
York	1,700	345.6	411.4
South Carolina	**48,518**	**382.3**	**453.4**

*Rates are per 100,000

South Carolina Cancer Incidence Data Tables

Table 1A. Number of Cancer Cases and Incidence Rates by Cancer Site, Race, and Gender, South Carolina, 1996-1998

	White Male		Black/Other Male		White Female		Black/Other Female		White		Black/Other		Male		Female		Total	
Primary Site	**Cases***	**Rate****	**Cases***	**Rate****	**Cases***	**Rate****	**Cases***	**Rate****	**Cases***	**Rate****	**Cases***	**Rate****	**Cases***	**Rate****	**Cases***	**Rate****	**Cases***	**Rate****
Anus/Anal Canal	36	0.8	18	1.4	74	1.4	12	0.7	110	1.1	30	1.0	54	1.0	87	1.2	141	1.1
Bladder	1,261	29.9	145	12.7	393	6.8	92	4.9	1,654	16.6	237	8.0	1,415	26.3	488	6.4	1,903	14.7
Bones/Joints	41	1.0	11	0.6	21	0.5	17	0.9	62	0.8	28	0.8	52	1.0	38	0.6	90	0.8
Brain/CNS	290	6.9	56	3.9	262	5.5	56	2.9	552	6.1	112	3.4	346	6.3	319	4.8	665	5.4
Breast	45	1.0	15	1.3	5,562	106.3	1,626	89.5	5,607	58.1	1,641	52.2	63	1.2	7,211	102.9	7,275	57.1
Cervix	---	---	---	---	432	8.6	265	13.8	432	8.6	265	13.8	---	---	703	9.9	703	9.9
Colon/Rectum	2,210	52.8	645	54.3	2,039	35.2	724	40.4	4,249	42.7	1,369	45.8	2,862	53.2	2,769	36.5	5,632	43.5
Esophagus	249	5.9	236	20.4	90	1.6	66	3.7	339	3.5	302	10.7	488	9.0	157	2.1	646	5.2
Eye/Orbit	31	0.7	4	0.3	25	0.5	1	0.1	56	0.6	5	0.2	35	0.6	28	0.4	63	0.5
Gallbladder	23	0.6	7	0.6	52	0.9	22	1.2	75	0.7	29	0.9	30	0.6	74	1.0	104	0.8
Hodgkin's Disease	92	2.2	24	1.4	96	2.2	26	1.2	188	2.3	50	1.3	116	2.0	122	1.9	238	1.9
Kidney/Renal Pelvis	570	13.3	152	12.6	340	6.5	141	7.8	910	9.5	293	9.7	725	13.2	481	6.9	1,206	9.6
Larynx	330	7.8	154	13.0	86	1.7	28	1.8	416	4.4	182	6.4	491	9.1	116	1.7	607	5.0
Leukemia	399	10.1	129	9.8	339	6.6	97	5.3	738	8.1	226	7.1	533	10.0	440	6.3	973	7.9
Liver/Intraheptic Bile Duct	158	3.8	63	5.1	76	1.3	38	2.1	234	2.4	101	3.2	222	4.1	115	1.6	337	2.6
Lung/Bronchus	3,700	87.4	1,056	90.6	2,318	43.0	512	29.6	6,018	62.1	1,568	54.1	4,766	88.4	2,840	40.0	7,607	60.6
Melanoma of Skin	856	19.7	19	1.5	674	13.4	15	0.8	1,530	16.1	34	1.1	908	16.1	728	10.4	1,636	12.8
Multiple Myeloma	185	4.4	93	8.1	147	2.5	129	7.3	332	3.4	222	7.5	280	5.3	278	3.7	558	4.3
Non-Hodgkin's Lymphoma	639	15.1	135	9.9	604	11.0	151	8.4	1,243	12.8	286	9.1	783	14.2	760	10.5	1,545	12.1
Oral Cavity/Pharynx	643	15.1	272	21.7	355	6.5	102	5.8	998	10.5	374	12.5	928	16.9	461	6.5	1,389	11.2
Other Digestive Organs	69	1.6	24	2.0	92	1.7	28	1.5	161	1.6	52	1.7	93	1.7	120	1.6	213	1.6
Other Endocrine/Thymus	25	0.7	11	0.8	21	0.4	9	0.5	46	0.5	20	0.6	36	0.7	30	0.5	66	0.5
Other Female Genital Organs	---	---	---	---	219	4.1	55	2.9	219	4.1	55	2.9	---	---	277	3.8	277	3.8
Other Male Genital Organs	9	0.2	1	0.1	---	---	---	---	9	0.2	1	0.1	10	0.2	---	---	10	0.2
Other Respiratory Organs	112	2.7	21	1.7	28	0.5	13	0.7	140	1.5	34	1.1	133	2.4	44	0.6	177	1.4
Other Urinary System	12	0.3	5	0.4	10	0.2	4	0.2	22	0.2	9	0.3	17	0.3	14	0.2	31	0.2
Ovary	---	---	---	---	680	13.0	149	8.1	680	13.0	149	8.1	---	---	831	11.9	831	11.9
Pancreas	363	8.6	150	12.6	386	6.6	186	9.9	749	7.5	336	11.1	513	9.5	574	7.4	1,087	8.4
Penis	29	0.7	15	1.3	---	---	---	---	29	0.7	15	1.3	45	0.9	---	---	45	0.9
Prostate	5,177	123.0	2,418	213.4	---	---	---	---	5,177	123.0	2,418	213.4	7,748	145.1	---	---	7,748	145.1
Small Intestine	44	1.1	21	1.8	54	1.0	26	1.5	98	1.0	47	1.6	65	1.2	81	1.1	146	1.1
Soft Tissues	111	2.8	52	3.6	86	1.7	36	1.9	197	2.2	88	2.7	163	3.0	122	1.8	286	2.3
Stomach	296	7.0	204	16.9	149	2.5	137	7.2	445	4.4	341	11.1	504	9.4	289	3.6	793	6.1
Testis	191	4.0	19	1.1	---	---	---	---	192	4.0	19	1.1	211	3.2	---	---	212	3.2
Thyroid	99	2.3	9	0.7	313	6.6	97	4.9	412	4.4	106	3.0	108	1.9	412	6.1	520	4.0
Unknown Primary	534	12.8	195	15.6	540	9.2	203	10.9	1,074	10.7	398	12.8	737	13.6	748	9.7	1,486	11.4
Ureter	34	0.8	6	0.5	17	0.3	1	0.1	51	0.5	7	0.2	40	0.7	18	0.2	58	0.4
Uterus (Corpus, NOS)	---	---	---	---	874	16.7	335	19.5	874	16.7	335	19.5	---	---	1,214	17.4	1214	17.4
All Sites	**18,863**	**447.1**	**6,385**	**541.4**	**17,454**	**326.4**	**5,399**	**297.9**	**36,318**	**375.2**	**11,784**	**392.7**	**25,520**	**472.0**	**22,989**	**321.1**	**48,518**	**382.3**

*Number excludes in situ cases of cancer, except bladder in situ.

**Rate per 100,000, age-adjusted to the 1970 US standard population.

Table 2A. Number of Cancer Cases by Cancer Site and 5-Year Age Group, South Carolina, 1996-1998

	Number of Cases*																	
Primary Site	**0-4**	**5-9**	**10-14**	**15-19**	**20-24**	**25-29**	**30-34**	**35-39**	**40-44**	**45-49**	**50-54**	**55-59**	**60-64**	**65-69**	**70-74**	**75-79**	**80-84**	**85+**
Anus/Anal Canal	0	0	0	0	0	1	6	5	11	9	17	19	13	14	14	11	11	10
Bladder	2	0	3	0	1	4	12	15	36	45	115	153	206	284	361	318	205	139
Bones/Joints	0	3	11	9	8	7	3	10	8	5	3	5	3	1	7	4	1	2
Brain/CNS	23	21	12	12	11	26	29	28	39	44	54	44	64	67	84	66	28	12
Breast (Female)	1	0	0	2	3	42	101	318	519	720	767	771	802	842	804	696	471	331
Breast (Male)	0	0	0	0	0	0	0	2	1	8	4	8	9	9	7	9	4	2
Breast (Total)	1	0	0	2	3	42	101	320	521	728	771	779	811	851	811	705	475	333
Cervix	0	0	0	2	12	43	57	83	90	97	54	41	54	36	47	33	26	26
Colon/Rectum	0	0	0	1	4	19	34	90	144	265	373	494	650	733	904	824	575	510
Esophagus	0	0	0	1	0	0	0	2	18	47	73	74	99	102	104	69	34	23
Eye/Orbit	5	1	0	0	0	0	3	2	2	2	4	7	6	5	10	4	5	7
Gallbladder	0	0	0	0	0	0	0	2	3	4	1	5	12	13	19	18	12	15
Hodgkin's Disease	1	0	13	17	31	27	27	25	20	17	8	5	9	10	10	8	6	4
Kidney/Renal Pelvis	15	4	1	2	4	6	10	31	55	93	108	126	138	186	178	134	77	36
Larynx	0	0	0	0	0	0	2	7	20	42	66	91	87	112	83	55	33	9
Leukemia	40	26	24	22	15	20	22	24	31	33	51	61	92	91	134	121	81	84
Liver/Intraheptic Bile Duct	4	2	0	0	0	1	1	8	24	19	21	20	37	49	40	54	37	20
Lung/Bronchus	1	0	0	2	0	6	18	64	125	296	548	762	1,093	1,408	1,394	1,049	564	259
Melanoma of Skin	1	1	2	6	32	58	89	124	118	163	183	146	154	171	159	117	58	49
Multiple Myeloma	0	0	0	0	0	0	0	5	16	26	34	52	76	67	87	86	60	49
Non-Hodgkin's Lymphoma	2	6	7	14	12	27	29	40	64	90	113	137	164	200	229	205	119	82
Oral Cavity/Pharynx	1	0	4	7	5	5	20	29	70	150	150	164	182	171	150	143	84	51
Other Digestive Organs	1	0	0	0	1	2	3	3	12	10	13	16	28	31	26	29	20	17
Other Endocrine/Thymus	6	2	1	1	2	2	0	4	4	9	3	3	5	6	6	8	2	2
Other Female Genital Organs	0	0	0	4	2	0	9	9	15	20	33	22	15	34	29	29	31	24
Other Male Genital Organs	0	0	0	0	0	1	0	1	0	0	2	1	0	2	1	1	1	0
Other Respiratory Organs	6	0	2	1	3	3	3	2	4	6	15	12	20	16	30	33	13	7
Other Urinary System	0	0	0	0	0	0	1	2	1	0	2	1	3	4	8	4	4	1
Ovary	0	1	5	0	4	19	21	29	49	61	74	87	100	105	81	95	57	41
Pancreas	0	0	0	0	0	2	2	8	22	49	80	77	118	165	159	174	116	115
Penis	0	0	0	0	0	0	0	2	2	1	3	4	4	3	8	8	1	9
Prostate	1	0	0	0	0	0	0	1	33	138	383	724	1,202	1,728	1,632	1,095	520	288
Small Intestine	0	0	0	0	0	2	2	3	5	12	14	8	21	16	19	19	14	11
Soft Tissues	8	5	8	9	11	9	14	18	11	14	26	25	24	24	30	21	13	15
Stomach	0	0	1	1	0	1	6	10	21	37	54	64	72	119	122	98	99	85
Testis	2	1	2	4	13	37	45	43	23	20	11	1	2	5	1	2	0	0
Thyroid	0	0	2	7	27	47	54	49	52	61	47	36	40	28	28	21	14	7
Unknown Primary	2	0	2	5	5	7	25	27	42	83	108	108	140	177	199	220	163	171
Ureter	0	0	0	0	0	0	0	0	2	0	1	3	5	12	15	10	9	1
Uterus (Corpus, NOS)	0	0	0	0	4	7	14	30	39	70	113	128	176	194	171	129	88	49
All Sites	**122**	**73**	**100**	**129**	**210**	**431**	**662**	**1,155**	**1,752**	**2,766**	**3,729**	**4,505**	**5,925**	**7,240**	**7,390**	**6,020**	**3,656**	**2,563**

*Number excludes in situ cases of cancer, except bladder in situ.

Table 3A. Age-Specific Incidence Rates by Cancer Site and 5-Year Age Group, South Carolina, 1996-1998

	Age-Specific Rate*																	
Primary Site	**0-4**	**5-9**	**10-14**	**15-19**	**20-24**	**25-29**	**30-34**	**35-39**	**40-44**	**45-49**	**50-54**	**55-59**	**60-64**	**65-69**	**70-74**	**75-79**	**80-84**	**85+**
Anus/Anal Canal	---	---	---	---	---	0.1	0.7	0.5	1.2	1.2	2.7	3.7	2.9	3.3	3.9	4.0	6.8	8.2
Bladder	0.3	---	0.4	---	0.1	0.5	1.4	1.6	4.1	6.0	18.4	30.1	45.3	66.4	99.9	116.9	126.1	113.5
Bones/Joints	---	0.4	1.4	1.1	1.0	0.8	0.3	1.1	0.9	0.7	0.5	1.0	0.7	0.2	1.9	1.5	0.6	1.6
Brain/CNS	2.9	2.6	1.5	1.4	1.3	3.0	3.3	3.1	4.4	5.9	8.7	8.7	14.1	15.7	23.2	24.2	17.2	9.8
Breast (Female)	0.3	---	---	0.5	0.7	9.6	22.5	68.1	115.6	188.5	236.3	285.9	327.7	356.1	386.9	422.8	439.0	364.3
Breast (Male)	---	---	---	---	---	---	---	0.4	0.2	2.2	1.3	3.4	4.3	4.7	4.6	8.4	7.2	6.3
Breast (Total)	0.1	---	---	0.2	0.4	4.8	11.5	35.1	59.1	97.3	123.7	153.3	178.5	199.1	224.4	259.1	292.2	265.5
Cervix	---	---	---	0.5	2.9	9.8	12.7	17.8	20.0	25.4	16.6	15.2	22.1	15.2	22.6	20.0	24.2	28.6
Colon/Rectum	---	---	---	0.1	0.5	2.2	3.9	9.9	16.3	35.4	59.8	97.2	143.1	171.5	250.2	302.8	353.7	416.6
Esophagus	---	---	---	0.1	---	---	---	0.2	2.0	6.3	11.7	14.6	21.8	23.9	28.8	25.4	20.9	18.8
Eye/Orbit	0.6	0.1	---	---	---	---	0.3	0.2	0.2	0.3	0.6	1.4	1.3	1.2	2.8	1.5	3.1	5.7
Gallbladder	---	---	---	---	---	---	---	0.2	0.3	0.5	0.2	1.0	2.6	3.0	5.3	6.6	7.4	12.3
Hodgkin's Disease	0.1	---	1.6	2.0	3.7	3.1	3.1	2.7	2.3	2.3	1.3	1.0	2.0	2.3	2.8	2.9	3.7	3.3
Kidney/Renal Pelvis	1.9	0.5	0.1	0.2	0.5	0.7	1.1	3.4	6.2	12.4	17.3	24.8	30.4	43.5	49.3	49.2	47.4	29.4
Larynx	---	---	---	---	---	---	0.2	0.8	2.3	5.6	10.6	17.9	19.2	26.2	23.0	20.2	20.3	7.4
Leukemia	5.1	3.2	3.0	2.6	1.8	2.3	2.5	2.6	3.5	4.4	8.2	12.0	20.3	21.3	37.1	44.5	49.8	68.6
Liver/Intraheptic Bile Duct	0.5	0.2	---	---	---	0.1	0.1	0.9	2.7	2.5	3.4	3.9	8.1	11.5	11.1	19.8	22.8	16.3
Lung/Bronchus	0.1	---	---	0.2	---	0.7	2.0	7.0	14.2	39.6	87.9	149.9	240.6	329.4	385.8	385.5	346.9	211.5
Melanoma of Skin	0.1	0.1	0.3	0.7	3.8	6.7	10.1	13.6	13.4	21.8	29.4	28.7	33.9	40.0	44.0	43.0	35.7	40.0
Multiple Myeloma	---	---	---	---	---	---	---	0.5	1.8	3.5	5.5	10.2	16.7	15.7	24.1	31.6	36.9	40.0
Non-Hodgkin's Lymphoma	0.3	0.7	0.9	1.7	1.4	3.1	3.3	4.4	7.3	12.0	18.1	27.0	36.1	46.8	63.4	75.3	73.2	67.0
Oral Cavity/Pharynx	0.1	---	0.5	0.8	0.6	0.6	2.3	3.2	7.9	20.1	24.1	32.3	40.1	40.0	41.5	52.6	51.7	41.7
Other Digestive Organs	0.1	---	---	---	0.1	0.2	0.3	0.3	1.4	1.3	2.1	3.1	6.2	7.3	7.2	10.7	12.3	13.9
Other Endocrine/Thymus	0.8	0.2	0.1	0.1	0.2	0.2	---	0.4	0.5	1.2	0.5	0.6	1.1	1.4	1.7	2.9	1.2	1.6
Other Female Genital Organs	---	---	---	1.0	0.5	---	2.0	1.9	3.3	5.2	10.2	8.2	6.1	14.4	14.0	17.6	28.9	26.4
Other Male Genital Organs	---	---	---	---	---	0.2	---	0.2	---	---	0.7	0.4	---	1.0	0.7	0.9	1.8	---
Other Respiratory Organs	0.8	---	0.3	0.1	0.4	0.3	0.3	0.2	0.5	0.8	2.4	2.4	4.4	3.7	8.3	12.1	8.0	5.7
Other Urinary System	---	---	---	---	---	---	0.1	0.2	0.1	---	0.3	0.2	0.7	0.9	2.2	1.5	2.5	0.8
Ovary	---	0.2	1.3	---	1.0	4.3	4.7	6.2	10.9	16.0	22.8	32.3	40.9	44.4	39.0	57.7	53.1	45.1
Pancreas	---	---	---	---	---	0.2	0.2	0.9	2.5	6.6	12.8	15.2	26.0	38.6	44.0	64.0	71.3	93.9
Penis	---	---	---	---	---	---	---	0.4	0.5	0.3	1.0	1.7	1.9	1.6	5.2	7.4	1.8	28.5
Prostate	0.2	---	---	---	---	---	---	0.2	7.6	37.7	128.2	303.6	573.6	905.0	1062.9	1018.7	940.6	912.1
Small Intestine	---	---	---	---	---	0.2	0.2	0.3	0.6	1.6	2.2	1.6	4.6	3.7	5.3	7.0	8.6	9.0
Soft Tissues	1.0	0.6	1.0	1.1	1.3	1.0	1.6	2.0	1.2	1.9	4.2	4.9	5.3	5.6	8.3	7.7	8.0	12.3
Stomach	---	---	0.1	0.1	---	0.1	0.7	1.1	2.4	4.9	8.7	12.6	15.8	27.8	33.8	36.0	60.9	69.4
Testis	0.5	0.2	0.5	0.9	3.1	8.6	10.5	9.7	5.3	5.5	3.7	0.4	1.0	2.6	0.7	1.9	---	---
Thyroid	---	---	0.3	0.8	3.2	5.4	6.1	5.4	5.9	8.2	7.5	7.1	8.8	6.6	7.7	7.7	8.6	5.7
Unknown Primary	0.3	---	0.3	0.6	0.6	0.8	2.8	3.0	4.8	11.1	17.3	21.3	30.8	41.1	55.1	80.9	100.3	139.7
Ureter	---	---	---	---	---	---	---	---	0.2	---	0.2	0.6	1.1	2.8	4.2	3.7	5.5	0.8
Uterus (Corpus, NOS)	---	---	---	---	1.0	1.6	3.1	6.4	8.7	18.3	34.8	47.5	71.9	82.0	82.3	78.4	82.0	53.9
All Sites	**15.5**	**9.0**	**12.5**	**15.4**	**25.0**	**49.7**	**75.2**	**126.6**	**198.8**	**369.9**	**598.1**	**886.5**	**1304.2**	**1694.0**	**2045.0**	**2212.4**	**2248.7**	**2093.4**

*Rate per 100,000.

Table 4A. Number of Cancer Cases by County, South Carolina, 1996-1998

County	Number of Cases*										
	All Sites	Prostate	Lung/ Bronchus	Breast (Female)	Colon/ Rectum	Bladder	Melanoma of Skin	NHL	Oral/ Pharynx	Kidney/ Renal Pelvis	Cervix
Abbeville	287	54	43	39	29	14	8	10	13	7	3
Aiken	1,369	174	247	207	176	50	42	40	33	29	22
Allendale	139	16	27	21	17	5	2	4	3	4	1
Anderson	2,216	351	326	317	291	100	69	70	66	58	14
Bamberg	223	53	41	32	17	1	4	8	2	4	5
Barnwell	260	40	33	44	23	15	9	13	10	5	2
Beaufort	1,493	273	194	255	140	64	57	48	41	30	17
Berkeley	1,264	227	208	191	125	45	40	40	29	31	23
Calhoun	170	33	18	21	21	13	3	3	5	3	3
Charleston	4,169	693	626	575	491	158	175	139	145	104	41
Cherokee	640	99	102	100	68	18	20	24	17	17	13
Chester	476	78	77	57	71	15	15	7	18	14	10
Chesterfield	529	74	90	78	76	12	12	19	12	19	8
Clarendon	417	61	56	60	57	19	6	12	17	12	9
Colleton	538	91	90	79	61	12	13	18	13	13	7
Darlington	814	119	146	110	95	26	27	20	24	16	16
Dillon	374	64	59	52	37	17	12	15	10	9	8
Dorchester	1,079	180	174	176	122	33	35	40	23	32	14
Edgefield	172	27	29	28	16	9	1	7	4	3	4
Fairfield	324	65	48	47	40	14	7	3	11	4	10
Florence	1,762	306	283	259	194	66	46	53	54	46	25
Georgetown	910	170	150	111	96	48	31	24	28	23	12
Greenville	4,669	749	735	775	497	169	207	133	121	134	69
Greenwood	891	122	135	148	123	42	27	30	24	17	10
Hampton	223	39	28	33	26	13	3	8	4	3	5
Horry	2,550	412	403	383	291	137	92	67	73	60	31
Jasper	117	18	21	17	13	2	0	5	0	4	4
Kershaw	723	114	109	96	102	20	32	24	24	14	17
Lancaster	675	95	88	85	105	38	35	25	21	13	10
Laurens	751	97	126	123	118	23	17	23	18	12	11
Lee	235	52	33	27	30	6	6	5	9	5	4
Lexington	2,447	267	405	376	297	111	115	89	75	70	30
Marion	514	102	84	54	53	21	10	16	9	15	19
Marlboro	368	44	53	55	43	8	2	15	16	10	9
McCormick	102	16	13	17	17	4	0	3	1	2	1
Newberry	538	67	90	79	66	24	12	17	14	13	7
Oconee	750	104	128	115	94	31	25	27	14	24	16
Orangeburg	1,364	291	187	193	151	41	36	38	33	24	24
Pickens	1,151	189	195	150	112	58	63	38	29	28	17
Richland	3,714	575	570	546	396	118	104	134	125	104	54
Saluda	164	25	19	22	27	8	10	5	4	4	1
Spartanburg	3,159	496	539	514	357	124	99	111	84	63	34
Sumter	1,190	219	172	157	147	40	34	35	37	32	19
Union	416	53	72	57	54	22	15	16	13	14	5
Williamsburg	450	84	66	55	46	18	4	15	16	15	10
York	1,700	264	267	269	199	70	51	49	45	42	28
South Carolina	**48,518**	**7,748**	**7,607**	**7,211**	**5,632**	**1,903**	**1,636**	**1,545**	**1,389**	**1,206**	**703**

*Number of cases excludes in situ cancer, except bladder in situ.

NHL: Non-Hodgkin's Lymphoma

Table 5A. Age-Adjusted Incidence Rates by County, South Carolina, 1996-1998

County	Age-Adjusted Rate*										
	All Sites	Prostate	Breast (Female)	Lung/ Bronchus	Colon/ Rectum	Bladder	Melanoma of Skin	NHL	Oral/ Pharynx	Cervix	Kidney/ Renal Pelvis
Abbeville	292.4	132.5	73.9	43.0	29.4	12.1	8.4	10.7	14.1	5.3	7.0
Aiken	294.8	85.8	81.1	53.3	37.9	10.6	8.7	8.6	7.2	8.6	6.0
Allendale	379.6	107.6	113.4	74.9	43.2	10.7	6.4	10.5	10.4	7.0	12.2
Anderson	361.8	135.4	94.2	53.6	46.4	15.6	12.1	11.6	11.2	4.9	9.7
Bamberg	382.7	210.2	97.4	69.4	28.1	1.7	7.0	12.6	4.3	16.8	6.6
Barnwell	355.2	129.2	105.2	43.7	29.4	22.1	13.2	17.7	13.2	3.3	6.6
Beaufort	401.8	151.4	134.7	50.3	36.5	16.6	16.2	12.8	11.8	10.1	8.5
Berkeley	426.3	185.3	111.0	74.1	43.4	15.7	10.8	13.0	10.0	13.2	10.7
Calhoun	343.8	152.5	76.3	36.1	42.6	25.8	6.1	5.3	10.8	12.2	6.0
Charleston	449.0	180.1	112.1	68.5	52.3	16.4	18.6	14.7	16.0	8.1	11.4
Cherokee	354.8	132.0	95.9	60.3	37.7	10.0	11.2	12.5	9.1	14.5	10.0
Chester	386.0	150.3	81.2	64.6	54.4	11.9	12.4	7.0	14.4	15.5	11.6
Chesterfield	368.3	123.9	97.1	63.6	51.1	8.0	8.9	12.3	7.7	8.8	13.8
Clarendon	386.5	126.5	105.3	52.4	51.8	17.6	6.2	11.9	16.0	15.1	12.1
Colleton	406.9	155.9	112.7	67.4	45.1	9.0	9.7	13.6	10.0	9.3	9.9
Darlington	361.2	132.5	86.2	65.8	41.2	11.4	12.2	9.2	10.2	12.3	7.3
Dillon	369.0	166.7	93.0	56.8	35.4	16.4	10.6	15.5	10.5	15.2	8.9
Dorchester	481.7	203.7	138.3	81.8	55.1	15.6	13.7	16.8	11.1	10.0	13.5
Edgefield	259.4	97.0	73.0	43.7	24.1	13.6	1.4	10.7	6.8	9.7	4.1
Fairfield	399.3	181.2	116.5	59.1	46.3	15.2	8.6	4.6	14.8	18.7	5.3
Florence	433.2	187.7	110.3	70.4	47.1	16.1	10.8	12.9	13.6	10.1	11.3
Georgetown	465.6	190.6	105.2	72.9	48.4	23.8	15.5	13.4	15.7	12.8	12.6
Greenville	382.1	148.5	113.9	61.1	39.2	13.7	16.8	10.6	10.0	10.3	11.1
Greenwood	364.7	122.6	110.3	55.2	48.9	15.3	11.9	11.4	10.6	7.5	7.1
Hampton	341.1	145.7	97.9	42.5	39.0	18.7	4.5	12.1	6.9	13.5	4.8
Horry	394.0	137.1	112.7	61.3	44.4	20.8	14.2	10.5	11.6	9.3	9.1
Jasper	196.1	70.3	54.8	33.6	20.4	4.1	Ñ-	9.3	Ñ-	12.0	7.5
Kershaw	420.8	154.2	100.3	63.9	58.7	11.6	18.7	14.2	14.0	17.9	8.4
Lancaster	327.2	108.3	75.8	43.2	50.2	18.6	17.0	11.8	10.7	10.1	6.3
Laurens	317.8	100.6	90.8	54.8	47.4	8.8	8.2	10.2	7.5	8.8	5.7
Lee	360.8	205.1	73.3	53.4	43.2	8.5	8.9	8.3	13.9	11.4	7.9
Lexington	404.8	108.0	109.1	69.7	49.2	18.8	17.2	14.5	12.1	7.7	11.6
Marion	428.1	216.6	83.2	68.9	42.1	17.1	9.4	12.9	8.2	27.4	13.2
Marlboro	361.8	105.3	98.5	52.6	40.3	8.5	2.0	14.8	16.3	15.1	10.6
McCormick	290.0	108.2	96.5	41.5	49.1	8.3	Ñ-	8.7	3.9	7.2	6.3
Newberry	386.2	119.5	109.7	65.1	43.7	15.1	8.0	12.0	10.8	10.3	8.7
Oconee	292.1	87.7	85.1	50.3	35.4	11.6	10.6	9.9	5.6	12.1	9.1
Orangeburg	457.1	233.4	117.8	63.0	50.0	13.7	12.4	12.7	11.6	13.8	8.1
Pickens	327.7	124.6	79.5	56.6	31.4	16.1	18.4	10.3	8.4	8.8	8.4
Richland	429.6	164.4	110.7	67.0	45.8	13.4	11.2	15.3	15.2	9.8	12.1
Saluda	246.6	82.4	62.4	28.3	37.8	13.8	16.0	8.2	4.9	3.3	6.8
Spartanburg	358.5	134.6	104.5	61.9	38.6	13.7	11.3	12.9	9.2	7.0	7.3
Sumter	387.8	181.0	90.1	57.2	48.2	13.1	10.3	11.2	12.5	10.9	10.5
Union	344.9	105.8	84.9	59.0	43.3	18.2	13.5	13.7	11.3	7.1	11.3
Williamsburg	370.7	171.7	79.3	53.6	37.8	14.7	3.0	12.9	13.6	14.5	13.5
York	345.6	128.9	98.0	55.3	39.8	14.4	9.9	10.0	9.5	9.7	8.6
South Carolina	**382.3**	**145.1**	**102.9**	**60.6**	**43.5**	**14.7**	**12.8**	**12.1**	**11.2**	**9.9**	**9.6**

*Rate per 100,000, age-adjusted to the 1970 US standard population.

NHL: Non-Hodgkin's Lymphoma

DATA OVERVIEW

Data Sources

Cancer incidence data are based on cases reported to the South Carolina Central Cancer Registry (SCCCR) from 1996 to 1998. The data is reported from hospitals, laboratories, free-standing treatment centers and physicians offices across the state. The South Carolina Central Cancer Registry Act (SC Law 44-35) mandates cancer reporting in South Carolina from all health care providers.

The cancer incidence data highlighted in this report were grouped by site according to the International Classification of Disease Oncology, Version 2 codes for cancer sites. Cancer incidence and staging analyses were performed by the Division of Biostatistics of the Department of Health and Environmental Control (DHEC), and the South Carolina Central Cancer Registry.

Cancer mortality data are based on information reported to the Division of Vital Registry located within (DHEC) from 1994 to 1998. The cancer mortality data highlighted in this report were grouped by site according to the International Classification of Disease, Version 9. The Division of Biostatistics also performed cancer mortality analyses.

The national data used for comparison were obtained from the National Cancer Institute's SEER (Surveillance, Epidemiology, and End Results) program. The SEER program is made up of eleven population-based cancer registries across the county. SEER data are representative of 14% of the U.S. population, an appropriate comparison dataset.

Risk factor and screening data were obtained from the Behavioral Risk Factor Surveillance System (BRFSS), a state-based surveillance system administered by the Epidemiology Surveillance and Program Support Division at DHEC, in collaboration with the Centers for Disease Control. The objective of BRFSS is to collect information on health practices and risk behaviors in the adult population. Information is self-reported and does not include South Carolinians without a household telephone.

Data on youth tobacco use were obtained from the Youth Risk Behavior Surveillance System (YRBSS), also administered by the Epidemiology Surveillance and Program Support Division of DHEC. The YRBSS monitors six categories of priority health-risk behaviors among youth and young adults including behaviors that contribute to unintentional and intentional injuries; tobacco use; alcohol and other drug use; sexual behaviors that contribute to unintended pregnancy and sexually transmitted diseases; unhealthy dietary behaviors; and physical inactivity. The YRBSS includes a national school-based survey conducted by the CDC as well as state, territorial, and local school-based surveys conducted by education and health agencies.

Methodology

All in situ and invasive malignant neoplasms are reported to the South Carolina Central Cancer Registry with two exceptions. Basal and squamous cell carcinomas of the skin are not reported, except when occurring in mucous membranes. Carcinoma in situ of the cervix in not reported as directed by the National Program of Cancer Registries. All other malignancies are reportable.

The data in this report include only invasive cancers, with one exception – bladder cancer. The cancer data is presented in this way so that consistency is met when comparing South Carolina data to SEER data.

Incidence rates for South Carolina were calculated per 100,000 population and age-adjusted to the 1970 US standard (adjustment to the 2000 US standard was done for the section entitled "Age Adjustment"). Rates were calculated on incidence data for the period 1996 through 1998.

Mortality rates for South Carolina were calculated per 100,000 population and age-adjusted to the 1970 US standard. Except where calculated to show trends, the mortality rates are five-year rates for the period 1994 through 1998.

All estimated numbers of cases and deaths for 2002 were calculated by applying the SEER Estimated Annual Percent Change (EAPC) values to the number of cases and deaths occurring in South Carolina in 1998, for each cancer site individually.

All maps included in this report show 1996 to 1998 cancer incidence rates by county. Statistical comparisons were made between the county rates and the state ("average") rate. A county rate was determined to be statistically different from the state rate at a 0.05 significance level. This significance level means that if the calculated p-value was less than 0.05, then we are 95% confident that the county rate was significantly different than the state rate.

GLOSSARY

Age-adjusted rate – Cancer rates vary with age, and populations vary by their age-distributions. Age adjustment allows for comparison of rates between different populations with different age structure. The "effect of age" is no longer present upon age-adjustment. In this report, age-adjusted rates are calculated for incidence and mortality by the direct method, using the age distribution of the 1970 US standard population. All age-adjusted rates are expressed per 100,000 population, and include only invasive cancers, with the exception of bladder in situ cancers.

Age-specific rate – The number of new cases diagnosed per 100,000 population over a specific time period for a specific age group. In this report, age-specific numbers are expressed in five year age groups (i.e. 0-4, 5-9, 10-14, etc.).

Behavioral Risk Factor Surveillance System (BRFSS) - a state-based surveillance system administered by the South Carolina Department of Health and Environmental Control, in collaboration with the Centers for Disease Control. The objective of the Behavioral Risk Factor Surveillance System is to collect information on health practices and risk behaviors in the adult population.

Cancer site – The body organ or system where cancer originates; the anatomical site or origin.

Centers for Disease Control (CDC) - Located in Atlanta, GA, the CDC is an agency of the Department of Health and Human Services. The CDC serves as the national focus for developing and applying disease prevention and control, environmental health, and health promotion and education activities designed to improve the health of people of the United States.

Crude rate – The number of new cases or deaths during a specific time period per 100,000 individuals. There is no consideration (adjustment) given to the age factor.

Distant – Classification for cancer spread beyond adjacent organs or tissues, and/or metastasis to distant lymph nodes or tissues.

Five-year survival – The percentage of people with a given cancer who are expected to survive five years or longer with the disease.

In situ – Classification for pre-invasive malignancies, those that do not invade the basement membrane.

Incidence – The number of new cases diagnosed during a specific time period (i.e. one year).

Localized – Classification for invasive malignancies that are confined to the organ of origin.

Mammogram – An x-ray of the breast used to help find breast cancer early in women without any symptoms.

Metastasis – Movement of disease from one organ or part to another not directly connected.

Mortality – The number of deaths occurring during a specific time period. Diagnosis may have occurred prior to that specific time period.

National Program of Cancer Registries (NPCR)- Funded by the CDC, the NPCR is a population-based system of cancer registries established in 1992 by the Central Cancer Registries Amendment Act (Public Law 102-515). When fully implemented, programs funded by NPCR will collect data on cancer for 96% of the US population.

Pap smear – A specimen of cellular material scraped from the cervix of the uterus that is stained and examined under a microscope in order to determine if cancerous or precancerous changes are present.

Prevalence – A measure of the proportion of persons in a population with a certain disease at a given time.

Prostate-Specific Antigen (PSA) – A gland protein made primarily by the prostate. The PSA test is a blood test that measures the levels of PSA in order to detect prostate cancer as well as monitor the results of treatment.

Regional – Classification for cancer spread by direct extension to adjacent organs or tissue, and/or spread to lymph nodes considered regional to the organ of origin, but no further spread has occurred.

Risk factor – Anything that increases a person's chance of getting a disease. Examples include smoking, diet, and age.

Sigmoidoscopy/Proctoscopy – Procedure in which the inside of the rectum and sigmoid colon are viewed through a lighted tube to detect pre-malignant or malignant growths.

Surveillance, Epidemiology and End Results (SEER)- Program of the National Cancer Institute that collects and publishes cancer incidence and survival data from 11 population-based cancer registries and three supplemental registries covering approximately 14 percent of the United States population.

Stage at diagnosis – The extent of disease spread from the organ or origin at time of diagnosis. This report uses SEER General Summary Staging System. This system includes five stages: in situ, localized, regional, distant, and unstaged. In this report, in situ and localized are classified as "early stage." Regional and distant are considered "late stage." Cancers diagnosed as in situ are considered pre-invasive. Localized, regional, and distant staged cancers are invasive.

Unstaged – Classification resulting from insufficient information available to determine stage of disease at diagnosis.

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